UK MET OFFICE
GLOBAL DATA MONITORING REPORT

November 2004

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Exeter. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Exeter in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background) field, although to provide background values valid at the observation time for non-main hour data, time-interpolation of the T+3, T+6 and T+9 forecasts is used; and for sea surface temperature the background field is the analysis from the previous day. Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1and 2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea surface temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Exeter and assimilated into model runs. All data are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Exeter and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Exeter and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

Figures 40-54 show sounding statistics from the polar orbitting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
41	Mean	Surface (HIRS8)
42	SD	Surface (HIRS8)
43	Mean	700 (HIRS15)
44	SD	700 (HIRS15)
45	Mean	500-700 (HIRS11)
46	SD	500-700 (HIRS11)
47	Mean	400 (HIRS4)
48	SD	400 (HIRS4)
49	Mean	700 (AMSUA5)
50	SD	700 (AMSUA5)
51	Mean	300 (AMSUA7)
52	SD	300 (AMSUA7)
53	Mean	100 (AMSUA9)
54	RMS	100 (AMSUA9)

Figures 55-69 show sounding statistics from the polar orbitting satellite NOAA-17. Figure 55 shows the mean daily number of ATOVS soundings, and figures 56-69 show mean and standard deviation observation-background differences for brightness temperature for selected channels.

Figure		Weighting function peak (hPa)
56	Mean	Surface (HIRS8)
57	SD	Surface (HIRS8)
58	Mean	700 (HIRS15)
59	SD	700 (HIRS15)
60	Mean	500-700 (HIRS11)
61	SD	500-700 (HIRS11)
62	Mean	400 (HIRS4)
63	SD	400 (HIRS4)
64	Mean	700 (AMSUA5)
65	SD	700 (AMSUA5)
66	Mean	300 (AMSUA7)
67	SD	300 (AMSUA7)
68	Mean	100 (AMSUA9)
69	RMS	100 (AMSUA9)

N.B. All satellite sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Exeter during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Exeter in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Exeter from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.
25. December 2002. Included statistics for ATOVS sounding data from NOAA-17.
26. December 2002. Meteosat-7 and Meteosat-5 SATOB winds replaced by higher resolution BUFR-coded winds.
27. November 2003. Included temperature and relative humidity statistics for ships, fixed buoys and platforms in Table 1.
28. November 2003. NOAA 17 statistics no longer available due to malfunction of the AMSU-A instrument.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed ($m\ s^{-1}$).
:Wind direction (Degrees).
:Air temperature (Degrees C).
:Relative Humidity (%).
:Sea surface temperature (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:PGE :Percentage of observations with gross errors.

:%REJ :Percentage of observations flagged excluding those with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the wind observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)
:15 degrees (air temperature)
:10 degrees (sea surface temperature)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias|	≥ 4 hPa	(pressure),
	≥ 5 $m\ s^{-1}$	(wind speed),
	≥ 30 degrees	(direction).
	≥ 3 degrees	(sea surface temperature).
	≥ 4 degrees	(air temperature)
	≥ 15%	(relative humidity)
2.SD	≥ 6 hPa	(pressure),
	≥ 80 degrees	(direction).
	≥ 5 degrees	(sea surface temperature).
	≥ 6 degrees	(air temperature)
	≥ 25%	(relative humidity)
3.PGE	≥ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8CF3	P	37	0	92	1.9	-5.8	6.1
A8FA5	P	28	0	0	1.0	5.7	5.8
CYLY	P	20	30	30	0.9	0.5	1.0
C6FE5	P	46	0	13	0.9	4.3	4.4
C6FV3	P	38	0	39	5.9	5.8	8.2
ELRR2	P	22	0	73	1.5	-5.3	5.5
ELWD5	P	59	2	5	1.6	4.3	4.6
FNYF	P	97	0	67	1.1	-4.2	4.3
OXFU2	P	38	0	3	2.2	4.3	4.8
UCBM	P	36	58	58	1.3	-1.4	1.9
UCUD	P	64	9	50	6.2	-2.2	6.6
UDBK	P	23	9	61	5.3	-4.6	7.0
UDDE	P	50	50	58	2.7	-2.7	3.8
UDYN	P	108	56	91	7.7	4.6	9.0
UIAG	P	56	2	45	3.0	4.1	5.0
VQGQ4	P	33	3	39	2.8	9.1	9.6
VRZK	P	37	0	51	1.1	5.0	5.2
VTXK	P	26	0	69	2.0	5.0	5.3
WADZ	P	37	0	100	2.5	4.2	4.9
WCZ7337	P	21	0	76	3.2	-5.4	6.2
WSRH	P	30	0	50	1.0	-4.2	4.3
ZDFK7	P	34	0	0	1.4	4.4	4.6
14451	P	137	0	36	0.6	4.6	4.7
4XIS	P	54	0	0	0.9	4.3	4.4
62140	P	20	0	65	4.1	-6.2	7.5
62166	P	67	0	100	4.0	5.5	6.8

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
C6QF6	SPEED	32	0	38	4.5	8.6	9.8
DEOT	SPEED	103	0	17	5.5	5.2	7.5
DHDH	SPEED	33	0	3	3.6	5.2	6.3
ELTY4	SPEED	29	3	100	7.6	10.7	13.1
SCKM	SPEED	21	0	100	3.2	7.8	8.4
SJEI	SPEED	35	0	11	5.0	5.1	7.1
UCUE	SPEED	65	3	40	4.9	6.4	8.1
VWSZ	SPEED	29	0	10	3.9	5.3	6.6
WBN7617	SPEED	20	0	15	6.0	5.4	8.1
44138	SPEED	214	0	100	3.6	-10.4	11.1
9MBR8	SPEED	20	10	100	5.2	12.6	13.6
9MET6	SPEED	29	3	21	4.4	6.1	7.5

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
ELUX6	DIRN.	22	0	0	61.8	-46.1	77.1
ELZT3	DIRN.	195	0	0	68.6	42.7	80.8
UAUO	DIRN.	86	3	0	97.2	-12.5	98.0
UDYN	DIRN.	79	3	0	88.8	-18.9	90.8
V7CY4	DIRN.	27	0	0	40.4	40.9	57.5
3FEI6	DIRN.	26	0	0	23.7	-30.6	38.7
51301	DIRN.	43	0	0	36.1	-43.5	56.6
52083	DIRN.	55	0	0	50.0	-89.6	102.6

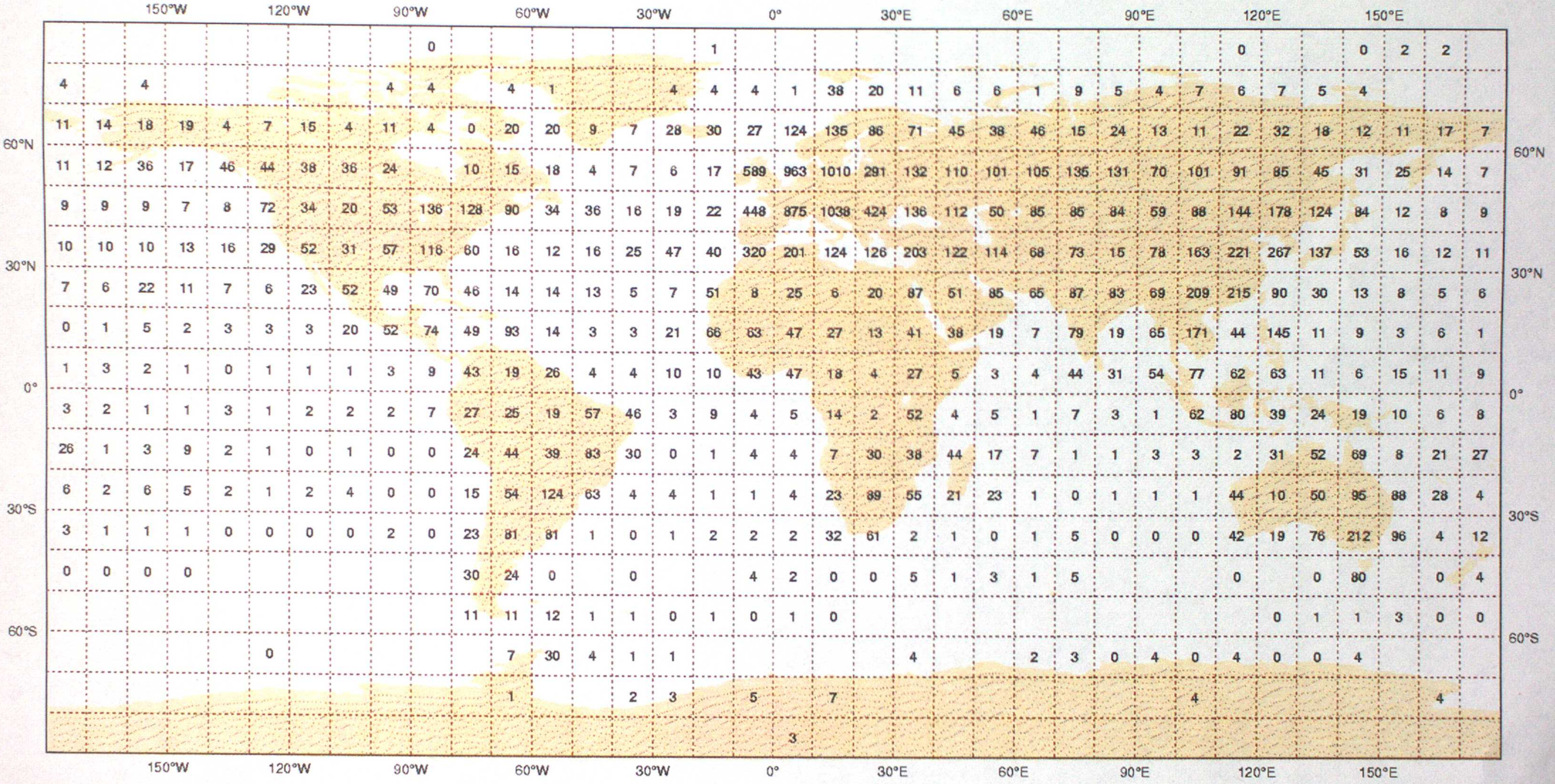
IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
CG2637	T	23	0	100	1.6	4.3	4.6
CYLY	T	28	0	100	1.7	5.5	5.8
DGZO	T	39	0	100	3.0	4.1	5.1
ELWC5	T	33	0	100	2.0	5.3	5.7
OXQF2	T	28	4	100	4.5	7.4	8.6
SP33	T	111	3	100	4.0	-5.7	6.9
UDBK	T	23	4	100	3.9	-4.2	5.7

WCW9126	T	108	5	100	4.3	4.2	6.0
WWU8	T	24	4	100	3.5	6.4	7.3
45137	T	667	3	100	3.8	5.5	6.7
45154	T	289	0	100	2.2	4.1	4.7
46081	T	658	4	100	3.0	6.4	7.1
46088	T	430	0	100	2.1	4.0	4.5
46131	T	665	0	100	2.5	4.8	5.4
46146	T	666	0	100	2.2	4.5	5.0

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
DACF	RH	319	0	100	31.0	-19.8	36.8
DBKV	RH	315	0	100	14.4	-23.2	27.3
DFPC	RH	49	0	100	10.4	29.4	31.1
DQVN	RH	32	0	100	16.8	15.1	22.6
FNAT	RH	57	0	100	7.3	20.0	21.3
LAIP5	RH	44	0	100	7.3	15.3	17.0
SERW	RH	40	0	100	7.6	17.7	19.3
VHA2334	RH	24	0	100	7.5	20.5	21.8
VQGQ4	RH	33	0	100	8.7	20.4	22.2
VTXL	RH	31	0	100	8.3	16.2	18.2
ZCBN5	RH	27	0	100	9.9	15.3	18.3
ZCGL2	RH	39	0	100	11.7	16.2	20.0

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8CE9	SST	29	0	100	1.4	3.1	3.4
A8CF2	SST	20	0	100	0.8	-4.6	4.7
A8CK2	SST	20	0	15	1.3	-3.5	3.7
DAJL	SST	53	0	100	0.7	3.3	3.4
DGGV	SST	26	0	100	1.2	3.1	3.4
FQWZ	SST	20	30	100	1.5	2.4	2.8
GQUK	SST	23	0	78	1.6	-3.4	3.8
HPZR	SST	41	0	68	1.5	4.5	4.7
KHRC	SST	20	0	100	0.8	-3.3	3.4
KHRP	SST	35	0	100	1.0	3.1	3.3
KRGB	SST	484	34	42	1.5	-0.7	1.6
KS011	SST	62	0	35	2.9	-3.2	4.3
KS035	SST	82	0	40	3.1	3.4	4.5
LAOT4	SST	23	26	26	1.4	-1.3	1.9
LF5T	SST	195	0	49	4.1	-4.6	6.2
P3AT9	SST	23	0	57	2.4	-4.0	4.7
P3KT8	SST	31	10	65	2.5	3.8	4.6
UBAM	SST	20	0	100	2.3	3.3	4.0
UCJO	SST	34	0	71	2.6	-5.5	6.1
UCNJ	SST	38	34	37	1.2	-0.8	1.4
VVKV	SST	32	0	100	0.8	3.9	4.0
WAAH	SST	25	0	100	1.5	3.7	4.0
WCZ5528	SST	76	0	38	1.9	-3.2	3.7
WGJF	SST	55	0	100	2.0	-6.1	6.4
WSRH	SST	26	0	100	1.4	-3.4	3.6
ZCBV7	SST	67	0	69	1.2	3.8	4.0
3EMQ9	SST	41	0	107	1.0	-3.5	3.6
31053	SST	76	75	75	0.4	0.1	0.4
44011	SST	616	0	100	0.4	-3.8	3.8
44014	SST	634	0	74	0.5	-3.1	3.2

Figure 1. SHIP/SYNOP mean daily count. NOVEMBER 2004
All hours
Global average number of observations in 24 hours = 19686



									0							1													0			0	2	2	
4		4						4	4		4	1			4	4	4	1	38	20	11	6	6	1	9	5	4	7	6	7	5	4			
11	14	18	19	4	7	15	4	11	4	0	20	20	9	7	28	30	27	124	135	86	71	45	38	46	15	24	13	11	22	32	18	12	11	17	7
11	12	36	17	46	44	38	36	24		10	15	18	4	7	6	17	589	963	1010	291	132	110	101	105	135	131	70	101	91	85	45	31	25	14	7
9	9	9	7	8	72	34	20	53	136	128	90	34	36	16	19	22	448	875	1038	424	136	112	50	85	85	84	59	88	144	178	124	84	12	8	9
10	10	10	13	16	29	52	31	57	116	60	16	12	16	25	47	40	320	201	124	126	203	122	114	68	73	15	78	163	221	267	137	53	16	12	11
7	6	22	11	7	6	23	52	49	70	46	14	14	13	5	7	51	8	25	6	20	87	51	85	65	87	83	69	209	215	90	30	13	8	5	6
0	1	5	2	3	3	3	20	52	74	49	93	14	3	3	21	66	63	47	27	13	41	38	19	7	79	19	65	171	44	145	11	9	3	6	1
1	3	2	1	0	1	1	1	3	9	43	19	26	4	4	10	10	43	47	18	4	27	5	3	4	44	31	54	77	62	63	11	6	15	11	9
3	2	1	1	3	1	2	2	2	7	27	25	19	57	46	3	9	4	5	14	2	52	4	5	1	7	3	1	62	80	39	24	19	10	6	8
26	1	3	9	2	1	0	1	0	0	24	44	39	83	30	0	1	4	4	7	30	38	44	17	7	1	1	3	3	2	31	52	69	8	21	27
6	2	6	5	2	1	2	4	0	0	15	54	124	63	4	4	1	1	4	23	89	55	21	23	1	0	1	1	1	44	10	50	95	88	28	4
3	1	1	1	0	0	0	0	2	0	23	81	81	1	0	1	2	2	2	32	61	2	1	0	1	5	0	0	0	42	19	76	212	96	4	12
0	0	0	0							30	24	0		0			4	2	0	0	5	1	3	1	5				0		0	80		0	4
										11	11	12	1	1	0	1	0	1	0											0	1	1	3	0	0
					0						7	30	4	1	1						4			2	3	0	4	0	4	0	0	4			
											1			2	3		5		7									4						4	
																		3																	

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures			
Period		:One calendar month.	
Data monitored		:Reports from each unique identifier for drifting buoys.	
Standard of comparison		:Background field from UKMO global model.	
Position		:Average latitude and longitude for period.	
Observation times		: All hours	
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees). :Sea surface temperature (degrees).	
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.	
	:PGE	:Percentage of observations with gross errors.	
	:%REJ	: Percentage of observations flagged excluding those with gross errors	
	:SD	:SD of difference of observations from background values excluding those with gross errors.	
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the wind observation is veered to the background.**	
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.	
GROSS ERROR LIMIT	:15 hPa :25 m s^{-1} :10 degrees	(pressure) (vector wind) (sea surface temperature)	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.$\lvert\text{bias}\rvert$	≥ 4 hPa ≥ 5 m s^{-1} ≥ 30 degrees ≥ 3 degrees	(pressure), (wind speed), (direction). (sea surface temperature).
	2.SD	≥ 6 hPa ≥ 80 degrees ≥ 5 degrees	(pressure), (direction). (sea surface temperature).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

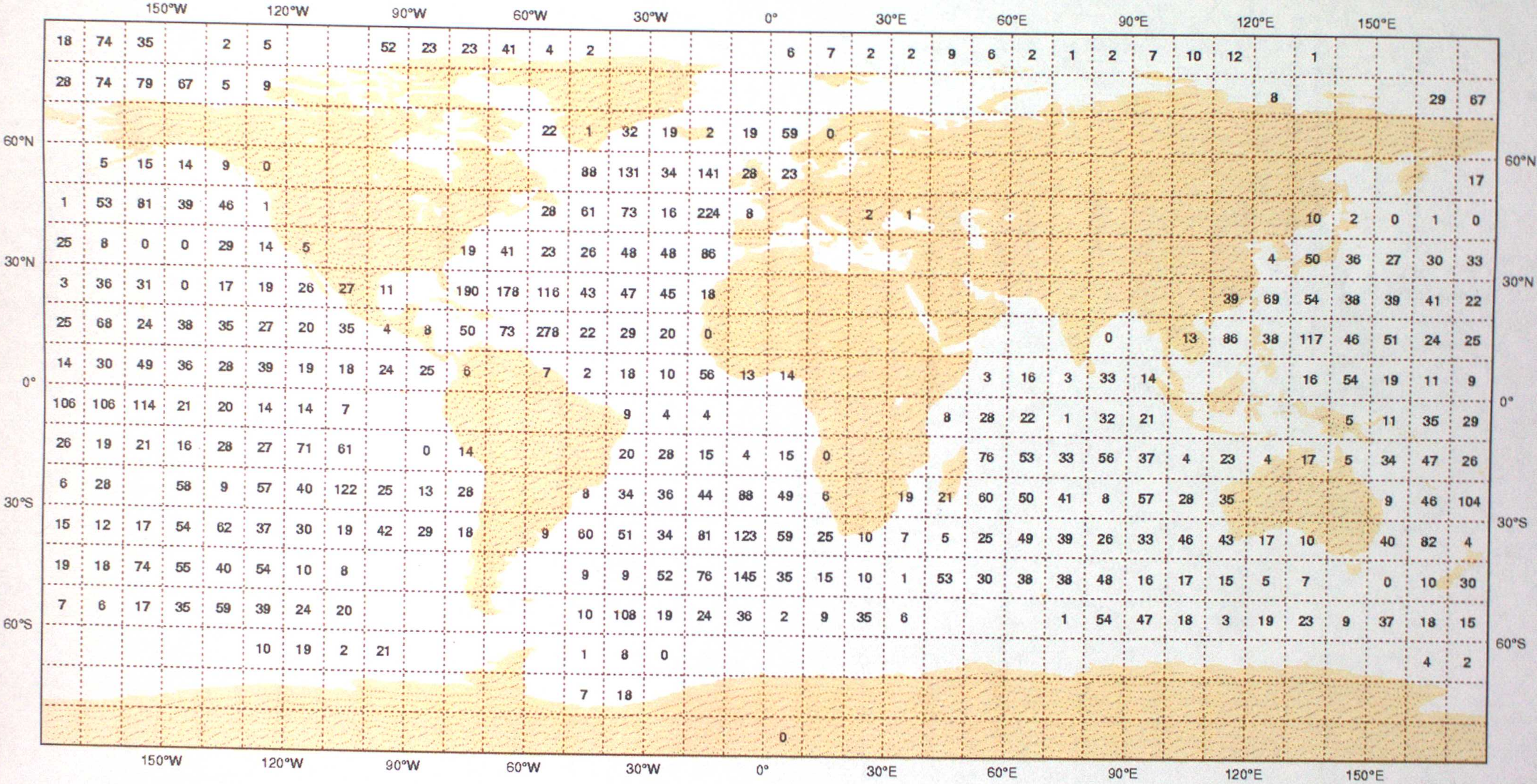
IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
16558	-32.9	79.7	P	294	28	28	0.4	-0.3	0.5
25572	88.1	-56.7	P	224	42	100	8.7	-3.3	9.3
41921	22.9	-71.6	P	221	19	67	5.9	6.4	8.7
41945	33.2	-117.3	P	88	38	91	4.8	-5.9	7.6
48582	85.1	-68.3	P	212	100	100			
53524	-11.4	89.1	P	143	0	76	1.0	5.4	5.5
61552	41.6	28.1	P	23	0	100	0.8	-5.7	5.7
61556	41.2	29.1	P	21	0	100	6.1	0.5	6.1

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41590	27.0	-55.5	SPEED	198	0	100	4.0	5.9	7.1
41921	22.9	-71.6	SPEED	208	1	100	3.5	-5.3	6.4
41922	21.6	-71.4	SPEED	209	1	100	2.3	-6.2	6.6
41925	23.4	-71.9	SPEED	214	2	100	3.2	-5.5	6.3

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13602	19.1	-47.5	DIRN.	34	0	0	22.6	60.4	64.5
52523	38.2	155.9	DIRN.	38	0	0	70.1	*****	123.5
52689	9.7	154.6	DIRN.	121	0	0	26.6	34.1	43.2

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
21904	38.3	135.5	SST	118	29	45	3.2	-0.1	3.2
41617	21.8	-70.8	SST	42	100	100			
41619	22.5	-70.2	SST	63	57	100	1.1	-2.3	2.6
41620	22.0	-63.6	SST	63	27	100	0.2	-2.2	2.2
41622	22.3	-71.1	SST	60	63	100	0.3	-2.1	2.2
41623	37.1	-69.8	SST	38	3	100	1.2	-4.6	4.8
41668	25.6	-69.3	SST	38	0	100	1.3	-9.1	9.2
41669	22.3	-70.4	SST	64	48	100	0.1	-2.2	2.2
41671	32.9	-117.3	SST	28	21	100	4.0	3.1	5.1
41853	23.0	-71.6	SST	41	93	100	1.2	-2.4	2.7
41854	20.0	-70.2	SST	65	43	100	0.1	-2.7	2.7
44502	50.6	-45.0	SST	21	0	100	0.5	-8.3	8.3
44722	43.4	-50.6	SST	643	0	83	1.7	-3.8	4.1
46600	30.3	-129.5	SST	241	0	100	0.5	-3.2	3.2
46972	17.9	156.6	SST	180	0	100	0.2	4.5	4.5
61554	41.6	32.3	SST	22	14	100	5.1	-1.5	5.3

Figure 2. DRIFTER mean daily count. NOVEMBER 2004
All hours
Global average number of observations in 24 hours = 10883



18	74	35		2	5			52	23	23	41	4	2					6	7	2	2	9	6	2	1	2	7	10	12		1				
28	74	79	67	5	9																									8				29	67
												22	1	32	19	2	19	59	0																
	5	15	14	9	0								88	131	34	141	28	23																	17
1	53	81	39	46	1							28	61	73	16	224	8			2	1										10	2	0	1	0
25	8	0	0	29	14	5				19	41	23	26	48	48	86														4	50	36	27	30	33
3	36	31	0	17	19	26	27	11		190	178	116	43	47	45	18													39	69	54	38	39	41	22
25	68	24	38	35	27	20	35	4	8	50	73	278	22	29	20	0										0		13	86	38	117	46	51	24	25
14	30	49	36	28	39	19	18	24	25	6		7	2	18	10	56	13	14					3	16	3	33	14				16	54	19	11	9
106	106	114	21	20	14	14	7							9	4	4						8	28	22	1	32	21					5	11	35	29
26	19	21	16	28	27	71	61		0	14				20	28	15	4	15	0				76	53	33	56	37	4	23	4	17	5	34	47	26
6	28		58	9	57	40	122	25	13	28			8	34	36	44	88	49	6		19	21	60	50	41	8	57	28	35				9	46	104
15	12	17	54	62	37	30	19	42	29	18		9	60	51	34	81	123	59	25	10	7	5	25	49	39	26	33	46	43	17	10		40	82	4
19	18	74	55	40	54	10	8						9	9	52	76	145	35	15	10	1	53	30	38	38	48	16	17	15	5	7		0	10	30
7	6	17	35	59	39	24	20						10	108	19	24	36	2	9	35	6				1	54	47	18	3	19	23	9	37	18	15
					10	19	2	21					1	8	0																			4	2
													7	18																					
																		0																	

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

SUSPECT SYNOPS (PRESSURE) BY WMO REGION NOV 2004

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60320	35.9N	5.4W	2	MS	54	2	4	0	0.8	-9.9	9.9
62056	32.8N	21.9E	625	S8	46	2	4	4	1.4	-5.1	5.3
63801	4.9S	29.6E	882	S8	48	2	4	0	0.7	8.6	8.6
63881	8.0S	31.6E	1923	S	37	0	0	0	1.5	12.9	13.0
65355	9.8N	1.1E	342	MS	102	0	0	0	0.5	-13.6	13.6
67229	14.7S	34.3E	1270	S8	20	16	80	15	0.2	14.2	14.2
68014	19.6S	18.1E	1411	S8	69	0	0	0	0.8	-6.9	6.9
68030	18.5S	25.6E	1071	S8	68	2	3	0	4.4	9.4	10.4
68102	19.9S	16.4E	1343	S8	56	0	0	0	0.8	6.2	6.3
68300	26.6S	15.1E	16	MS	39	25	64	0	0.3	-14.4	14.4
68312	26.5S	18.1E	1067	S8	77	0	0	0	0.8	4.5	4.6
68325	25.4S	25.4E	1275	8	55	0	0	0	0.6	4.1	4.1
68396	26.5S	31.3E	641	S8	50	0	0	2	1.4	5.0	5.2
68575	30.0S	30.0E	1175	S8	109	109	100	0			

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
25744	62.4N	166.1E	10	MS	91	0	0	0	1.2	-4.2	4.4
30554	54.5N	113.6E	995	MS	112	1	1	1	0.9	12.2	12.2
35416	49.1N	54.7E	128	S	108	0	0	1	1.1	4.2	4.3
36982	41.9N	78.2E	3635	S7	108	1	1	1	1.1	5.7	5.8
38565	40.6N	65.7E	485	MS	111	111	100	0			
40435	27.0N	44.1E	991	MS	54	0	0	2	1.8	7.6	7.8
40700	39.6N	47.9E	45	MS	101	0	0	0	1.1	-5.6	5.7
40713	37.4N	46.3E	1475	MS	103	0	0	0	1.1	13.2	13.2
40741	36.5N	61.2E	235	MS	105	0	0	1	1.4	-4.7	4.9
40743	36.2N	57.7E	978	MS	103	0	0	0	0.9	4.4	4.5
40757	35.6N	53.4E	1171	MS	104	0	0	0	1.1	4.6	4.7
40780	33.6N	46.4E	1362	MS	103	0	0	0	0.9	5.2	5.3
40854	29.1N	58.4E	1067	MS	100	2	2	98	1.1	9.8	9.9
41254	23.1N	57.6E	1755	S8	88	88	100	0			
44416	28.6N	81.6E	720	MS	41	3	7	0	1.3	4.7	4.9
47022	40.8N	128.2E	1224	S	96	0	0	3	0.9	4.6	4.7
47678	33.1N	139.8E	79	MS	112	0	0	0	0.7	-8.8	8.8
48924	21.1N	101.5E	644	S	42	0	0	0	0.8	10.8	10.8
48925	20.7N	102.0E	550	S	42	0	0	2	1.3	-10.1	10.2
48938	19.2N	101.7E	326	MS	43	28	65	0	0.4	14.6	14.6
50727	47.2N	119.9E	1028	MS	112	0	0	0	0.7	4.7	4.8
50978	45.3N	130.9E	234	MS	112	0	0	0	0.6	-5.5	5.5
51243	45.6N	84.9E	428	MS	112	0	0	48	2.8	-4.7	5.5
51288	45.4N	90.5E	1651	S	112	0	0	63	2.2	-4.9	5.4
52866	36.6N	101.8E	2262	S	112	0	0	0	1.0	-4.7	4.8
53083	44.6N	114.2E	1183	M	108	0	0	43	2.9	4.5	5.4
53352	41.7N	110.4E	1377	M	109	0	0	38	2.8	4.8	5.6
53480	41.0N	113.1E	1416	M	108	0	0	21	2.3	4.2	4.8
53646	38.3N	109.8E	1058	MS	112	0	0	0	0.7	-12.6	12.6
56462	29.0N	101.5E	2994	S	112	0	0	0	1.3	8.9	9.0
56768	25.0N	101.5E	1773	S	112	0	0	0	0.7	-5.5	5.5
57014	34.6N	105.9E	1086	M	107	0	0	0	2.8	4.5	5.3
57816	26.6N	106.7E	1074	MS	112	108	96	0	0.1	-14.7	14.7
59663	21.8N	112.0E	22	MS	112	0	0	0	0.8	-7.2	7.2

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	122	MS	26	0	0	54	1.3	-5.7	5.8
80342	1.4N	77.3W	1802	S	50	1	2	56	0.6	-13.8	13.8
80434	9.2N	66.0W	125	MS	32	0	0	0	1.1	-5.2	5.3
82181	2.0S	54.1W	146	MS	69	0	0	0	1.2	6.9	7.0
82704	7.6S	72.7W	170	MS	59	0	0	0	1.2	-4.7	4.9
82765	7.3S	47.5W	193	MS	72	1	1	0	0.9	4.3	4.4
83235	12.4S	46.4W	604	MS	76	0	0	0	0.8	6.0	6.1
83332	14.1S	46.4W	826	MS	76	1	1	0	1.9	12.4	12.5
83470	17.9S	50.9W	727	MS	74	0	0	1	1.0	-5.5	5.6
83531	18.6S	46.5W	940	MS	79	0	0	1	1.0	-6.5	6.6
83836	25.5S	50.6W	837	MS	77	1	1	0	0.8	-4.5	4.6
84401	5.2S	80.6W	49	MS	89	0	0	0	0.7	4.2	4.3
84425	5.9S	76.1W	179	MS	21	0	0	0	1.2	4.8	4.9
84452	6.8S	79.8W	29	MS	85	0	0	1	1.2	4.7	4.9
84455	6.5S	76.4W	281	MS	67	1	1	3	1.4	7.0	7.1
84472	7.1S	78.5W	2620	S	45	0	0	0	0.6	-4.7	4.7
84474	7.2S	76.7W	350	M	20	0	0	0	1.0	9.0	9.1
84501	8.1S	79.0W	26	MS	70	0	0	1	1.2	4.3	4.5
84686	13.6S	72.0W	3248	S	87	1	1	1	1.2	-4.3	4.5
84688	13.7S	73.4W	3444	S	38	0	0	0	0.5	-12.1	12.1
84782	18.1S	70.3W	468	MS	72	0	0	0	0.8	5.0	5.1
85140	14.3S	67.4W	140	MS	42	0	0	0	1.2	7.2	7.3
85210	16.3S	58.4W	124	MS	38	0	0	0	1.0	5.0	5.1
85264	18.5S	64.1W	1998	S	34	27	79	97	0.3	-14.3	14.3
85312	19.8S	63.9W	992	S	32	0	0	3	1.6	-10.1	10.2
85364	21.6S	64.7W	1854	S8	38	0	0	0	1.0	4.1	4.2
85406	18.3S	70.3W	55	M	110	0	0	0	0.7	4.5	4.6
85432	22.5S	68.9W	2320	S8	80	0	0	0	0.6	4.4	4.4

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71060	52.5N	116.1W	230	MS	112	112	100	0			
71181	47.1N	55.3W	29	MS	111	0	0	0	0.7	-5.9	5.9
71506	67.0N	136.2W	720	MS	108	0	0	13	2.3	-4.7	5.2
71581	54.5N	128.6W	215	MS	109	70	64	39	6.7	-6.7	9.5
72327	36.1N	86.7W	182	MS	109	0	0	0	0.7	4.0	4.1
76055	31.0N	114.9W	440	MS	46	46	100	0			
76225	28.6N	106.1W	1435	MS	66	0	0	2	1.3	-4.5	4.7
76543	22.0N	98.8W	104	MS	70	1	1	3	0.9	9.4	9.4
76658	19.2N	103.7W	494	MS	46	0	0	0	0.6	5.3	5.3
76683	19.3N	98.3W	2248	MS	76	0	0	0	0.7	4.0	4.1
76762	17.5N	99.5W	1265	MS	56	0	0	0	0.8	5.7	5.8
76773	17.8N	97.8W	1650	MS	24	0	0	0	0.6	6.2	6.2
76843	16.8N	93.1W	528	MS	91	1	1	0	0.8	-4.7	4.8
78588	17.2N	87.5W	-281	M	104	104	100	0			
78655	14.0N	89.6W	725	MS	39	0	0	26	3.6	9.4	10.1

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
94130	14.8S	131.9E	120	MS	111	0	0	0	1.1	4.7	4.8
97378	10.7S	123.1E	1	MS	36	34	94	0	0.1	-14.6	14.6

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS

01360	61.9N	7.9E	711	MS	105	0	0	1	1.5	6.6	6.8
06239	54.9N	44.7E	49	MS	333	82	25	0	7.6	2.0	7.9
06605	47.1N	7.1E	1599	S8	112	0	0	10	1.4	-5.3	5.5
06685	47.0N	9.1E	515	MS	112	0	0	4	1.3	7.4	7.5
08912	42.9N	0.8W	1434	MS	96	96	100	0			
08922	42.8N	0.2W	1660	MS	96	96	100	0			
10850	48.8N	10.7E	457	MS	333	0	0	0	0.4	-5.9	5.9
11116	47.5N	10.8E	870	MS	54	0	0	0	0.7	4.7	4.8
13269	44.3N	19.9E	176	MS	106	0	0	1	0.9	7.8	7.9
14554	44.9N	18.4E	136	S	55	8	15	0	0.7	-13.5	13.5
16450	37.6N	14.3E	940	S8	104	0	0	22	1.3	-4.8	5.0
16538	40.1N	9.3E	1022	S	34	0	0	0	0.9	9.2	9.2
17203	38.9N	40.5E	1177	S8	108	0	0	0	1.0	4.1	4.2
17210	37.9N	41.9E	890	MS	112	0	0	61	1.0	4.0	4.1
17521	35.2N	33.5E	285	MS	81	81	100	0			

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	MS	90	0	0	0	1.8	-5.0	5.3
89257	75.4S	59.9W	40	S	631	0	0	0	1.3	-6.0	6.1
89262	67.0S	60.6W	17	S	235	0	0	0	1.4	-4.2	4.4
89263	66.0S	66.1W	20	M	239	6	3	0	1.0	12.4	12.4
89266	72.2S	60.2W	91	S	249	248	100	0			
89272	75.0S	70.8W	1395	S	238	238	100	0			
89610	65.9S	113.1E	90	S	224	0	0	0	1.0	-8.5	8.6
89614	66.6S	111.2E	500	S	233	233	100	0			
89744	74.0S	43.1E	3353	S	246	0	0	0	0.6	7.1	7.1
89811	66.7S	112.8E	1366	S	229	0	0	0	1.3	-5.3	5.5

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored		
	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 m s^{-1} Vector Wind
SELECTION CRITERIA		:N REP ≥ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAH	3596	0	41	1.6	0.0	3519	0	40	0	6.1	0.4
AAL	5696	0	35	1.3	0.0	5328	0	37	0	6.6	0.1
AAR	1000	0	4	1.4	-0.3	981	1	5	0	8.1	-0.8
ACA	1753	0	7	1.5	0.1	1365	0	8	0	8.1	-0.4
ACI	91	0	2	1.0	0.1	91	0	2	0	4.7	1.1
ADB	36	0	3	2.7	-2.2	36	0	6	0	9.6	0.3
AEA	1494	1	2	1.5	-0.1	1232	0	3	0	8.4	0.0
AEL	187	11	41	4.5	3.7	185	1	7	0	9.2	-0.4
AFL	675	1	3	1.7	0.2	360	0	3	0	7.6	0.9
AFR	1159	0	9	1.4	0.3	1118	0	12	0	9.5	-0.3
AJM	292	0	1	1.2	-0.1	254	0	1	0	6.5	0.2
AJX	250	0	4	1.5	0.3	248	0	4	0	7.6	0.3
AMD	155	0	50	1.3	0.8	155	0	50	0	4.6	-0.1
AME	33	0	6	2.2	-1.0	33	0	6	0	6.8	-0.5
AMT	1745	1	44	1.2	0.0	1693	0	44	0	6.7	0.5
AMX	543	2	5	1.7	0.5	499	1	7	0	10.1	-0.1
ANA	54	0	7	1.2	0.0	54	0	9	0	8.8	-0.6
ANZ	5565	0	24	1.3	0.2	5553	0	25	0	6.4	0.5
ASY	39	0	10	1.9	0.0	39	0	8	0	3.9	0.9
ATN	121	1	100	4.1	-2.4	112	0	31	0	14.1	3.6
AUA	95	2	37	4.1	3.0	93	0	10	0	9.4	-0.8
AVA	298	1	4	1.6	0.6	298	0	51	0	10.9	-0.4
AVN	198	0	43	1.1	-0.4	194	0	44	0	7.8	0.3
AXF	48	0	40	1.8	0.7	48	0	38	0	5.3	0.7
AZA	563	1	7	2.3	0.6	468	1	6	0	9.7	-0.2
BAL	470	0	6	1.3	-0.1	462	1	8	0	8.1	-0.3
BAW	658	0	14	1.7	-0.3	442	1	17	0	6.8	0.3
BBR	193	1	2	1.2	0.3	193	1	100	0	16.0	1.6
BHP	80	3	3	1.3	-0.2	69	0	1	0	7.0	0.6
BPA	399	1	72	4.0	2.3	391	1	9	0	8.7	-0.1
BWA	393	1	4	1.6	0.4	353	0	5	0	8.5	0.1
CAJ	54	0	57	0.9	-0.4	53	0	58	0	7.9	-1.4
CAL	31	0	48	1.6	0.0	36	0	44	0	8.0	-0.4
CCA	311	1	15	2.1	0.0	333	1	100	0	12.5	-1.2
CES	443	1	6	1.6	0.2	441	1	9	0	9.1	-0.1
CFC	41	2	7	2.0	0.7	43	0	5	0	6.8	1.4
CFG	1031	0	3	1.3	0.2	944	0	5	0	8.2	-0.2
CKK	87	2	13	2.2	0.2	98	1	9	0	9.0	1.1
CKS	427	0	28	1.7	0.1	383	0	33	0	10.3	-0.2
CLX	420	0	6	1.7	-0.5	267	0	9	0	8.7	-0.4
COA	173	1	24	1.8	-0.1	128	0	25	0	9.3	0.3
CRL	649	0	4	1.7	0.8	621	0	48	0	8.9	-0.2
CSN	97	0	5	1.5	0.3	96	0	6	0	8.5	-0.3
CUB	266	0	8	1.7	0.1	253	0	8	0	10.3	0.3
DAF	21	0	0	1.4	0.7	20	0	5	0	6.5	0.7
DAL	2935	0	41	1.6	0.3	2706	0	44	0	6.9	0.3
DHL	141	5	100	6.8	-6.3	76	3	30	0	12.7	1.2
DLH	933	1	14	1.6	0.0	890	0	14	0	8.2	0.4
DRD	279	1	3	1.6	0.2	278	1	41	0	10.4	-1.5
EDW	81	2	6	1.7	-0.1	75	0	45	0	9.9	1.2
EEZ	85	0	7	2.4	0.9	85	0	8	0	11.2	-0.2
EIA	358	2	16	1.7	0.4	351	0	100	0	17.8	2.8
ELY	56	0	5	1.7	0.4	39	0	5	0	6.0	0.1
ETH	27	0	7	0.9	0.0	26	0	15	0	9.6	-0.3
EVA	161	0	6	1.7	0.0	176	0	4	0	6.4	-0.7
FCA	138	0	2	1.2	0.3	134	0	5	0	8.3	0.6
FDX	1704	0	43	1.4	0.3	1535	0	45	0	7.8	0.4
FIN	202	1	6	1.4	0.0	157	1	6	0	8.2	0.4
FJI	807	1	32	2.1	1.1	792	0	29	0	5.6	0.6

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FOM	753	0	24	1.3	0.1	754	0	25	0	7.6	1.0
FWI	552	1	5	1.5	-0.2	550	0	6	0	9.4	-0.5
GCO	73	0	10	1.4	0.4	70	1	13	0	7.2	1.3
GES	27	4	11	3.2	0.0	23	0	4	0	7.9	0.1
GRL	67	0	1	1.4	0.3	59	2	2	0	4.1	0.6
GTI	260	3	19	2.7	1.2	253	1	15	0	10.0	0.1
HAL	4202	0	39	1.8	0.6	4084	0	39	0	6.6	0.6
HBI	26	46	65	5.5	4.1	27	0	15	0	8.6	1.0
HMY	26	0	42	1.0	0.7	24	0	42	0	5.8	-0.1
HXL	430	0	3	1.4	-0.1	392	1	5	0	9.4	-0.1
IBE	3727	0	4	1.6	0.4	3675	0	7	0	9.8	-0.3
ICE	1203	1	8	1.6	0.0	819	0	6	0	8.4	0.5
IWD	329	2	4	1.2	0.0	326	0	4	0	7.4	0.2
JAL	2230	0	3	1.6	0.4	2211	0	4	0	7.6	-0.1
JAZ	939	1	5	1.4	0.8	934	1	5	0	6.9	-0.4
JBU	46	0	2	1.6	-0.4	50	0	2	0	5.5	0.9
KAI	25	0	40	2.2	1.9	24	0	42	0	7.8	1.8
KAL	1572	0	13	1.6	0.2	1566	0	14	0	7.7	0.0
KIW	22	0	55	5.0	2.9	22	0	36	0	9.7	1.6
KLM	1141	0	6	1.7	0.2	923	0	9	0	9.1	0.0
LAN	470	0	3	1.4	0.1	470	0	3	0	5.2	0.5
LAP	39	0	54	3.9	3.1	38	0	47	0	10.5	1.4
LDI	351	6	10	1.7	0.2	281	0	2	0	7.4	0.8
LNE	123	0	3	1.6	0.6	120	0	5	0	10.1	1.3
LOT	236	0	3	1.8	0.0	161	0	3	0	7.6	-0.1
LTU	1136	0	4	1.3	0.0	905	0	5	0	7.4	0.6
LXR	54	2	11	2.1	0.0	52	0	10	0	11.5	-2.0
MAS	246	0	7	1.6	0.3	243	0	7	0	7.7	-0.1
MON	45	0	4	2.1	0.4	43	0	2	0	9.5	0.1
MPD	381	0	2	1.6	0.4	365	0	4	0	9.4	0.2
MPH	697	0	2	1.7	-0.7	579	0	4	0	8.2	-0.4
MXA	63	5	22	3.3	1.0	63	0	100	0	15.4	-1.2
MYT	184	1	3	1.5	-0.1	151	0	5	0	7.7	-0.1
NAO	413	0	39	1.6	0.7	400	0	40	0	7.0	0.9
NCA	1028	0	5	1.6	0.2	810	0	6	0	8.0	0.1
NVR	58	0	5	1.3	-0.1	45	0	7	0	6.4	1.8
NWA	6748	1	15	1.6	0.2	6609	0	16	0	7.9	0.1
NZL	3189	0	9	1.1	0.1	3189	0	9	0	4.9	0.2
OAE	698	0	35	1.2	-0.1	633	0	44	0	8.9	1.0
OOM	39	0	3	1.8	-1.3	27	0	4	0	5.6	0.7
PAC	316	3	11	1.5	0.0	287	0	10	0	9.4	-0.7
PAL	1208	0	7	1.4	0.1	1159	1	9	0	8.2	-0.1
PAO	259	0	48	1.9	0.5	261	0	49	0	7.5	0.2
PBI	679	0	36	1.7	0.2	674	0	35	0	6.1	0.4
PLM	212	0	3	2.2	1.6	170	0	45	0	8.1	-0.4
PUA	29	3	52	2.8	1.2	28	0	54	0	15.3	0.0
QFA	3890	0	41	1.3	0.3	3879	0	40	0	6.0	0.3
QQA	53	6	49	1.6	-0.5	53	0	43	0	7.4	-0.9
RAM	280	1	4	1.9	0.3	216	0	55	0	9.7	0.6
RCH	296	1	100	3.3	-0.9	242	0	100	0	12.6	1.4
RRR	83	0	8	1.7	-0.2	84	0	11	0	6.4	0.3
RZO	557	0	4	1.7	0.1	541	1	51	0	9.4	0.5
SAA	55	0	5	1.2	0.0	54	0	7	0	9.0	0.8
SEU	106	2	8	1.6	0.2	96	0	8	0	8.8	0.1
SIA	413	0	1	1.4	0.5	413	0	1	0	5.1	0.5
SKI	29	3	48	3.3	0.0	37	0	51	0	12.6	0.5
SLM	140	0	1	1.2	0.5	142	0	47	0	8.4	-0.7
SOO	40	0	0	1.4	0.7	67	1	1	0	6.3	0.2
SQC	53	0	0	1.4	0.5	53	0	0	0	6.5	0.4

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SVH	245	0	6	1.3	1.1	245	0	6	0	4.3	0.1
TAM	27	4	44	2.3	1.0	27	11	44	0	11.4	2.9
TAP	504	1	3	1.5	-0.3	466	0	48	0	9.4	0.4
TCX	24	0	4	2.2	-0.5	22	0	0	0	4.6	0.4
THA	224	0	4	1.8	0.0	224	0	4	0	6.4	0.1
THT	887	0	23	1.1	0.5	884	0	23	0	5.0	1.0
TPA	49	0	0	1.2	0.4	47	0	0	0	7.3	-1.7
TSC	40	0	5	1.8	-0.5	32	0	3	0	4.2	0.8
UAE	487	0	7	1.5	0.5	483	0	6	0	5.3	0.6
UAL	237623	0	95	1.2	-0.1	237510	0	95	0	4.9	0.5
UPS	1740	1	58	2.0	0.7	1706	0	57	0	7.4	0.2
USA	184	3	4	1.2	0.2	148	0	3	0	9.2	0.5
VHF	46	0	2	1.8	0.3	46	0	0	0	5.0	1.0
VIR	168	1	6	1.6	-0.2	108	0	8	0	8.2	0.0
VPB	40	3	10	2.6	1.8	28	0	4	0	8.7	-1.1
VRG	59	3	49	2.6	0.9	59	0	100	0	17.6	3.2
VVJ	66	42	56	2.1	-0.9	68	0	38	0	10.2	-0.1
VVR	74	1	31	2.3	-0.2	74	0	28	0	6.6	0.0
WOA	463	0	14	1.6	0.3	405	0	18	0	9.2	-0.1
XLA	99	1	4	1.7	0.4	95	0	2	0	7.7	-0.4
YSS	37	0	0	1.1	-0.3	37	0	0	0	5.9	0.7

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	36057	0	10	1.2	0.7	36065	0	10	0	4.9	0.4
B-	7091	0	77	1.9	1.1	7091	0	76	0	4.6	0.3
EU	193713	0	26	1.2	0.4	193712	0	26	0	4.6	0.3
HK	3522	0	25	1.2	0.4	3522	0	25	0	4.9	0.2
JP	28079	0	53	1.4	0.7	28079	0	52	0	4.3	0.1
LN	20	0	40	3.4	-2.9	20	0	35	0	11.4	4.0
MK	1960	0	6	1.7	1.6	1920	0	6	0	6.4	1.5
SA	4739	1	15	1.4	0.8	4739	0	36	0	5.4	0.2
TN	28	0	25	1.8	0.9	30	0	30	0	9.6	0.4

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
N	949	2	26	2.2	0.7	831	0	28	0	8.3	0.2
US ACARS	947583	0	65	1.3	0.3	947580	0	65	0	5.1	0.6

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

- :N REP. :Number of observations received excluding duplicates.
- :PG :Percentage of observations with gross errors.
- :PR :Percentage of observations rejected by quality control including rejections from the duplicate check.
- :PC :Percentage of observations with calm winds.
- :RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
- :BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

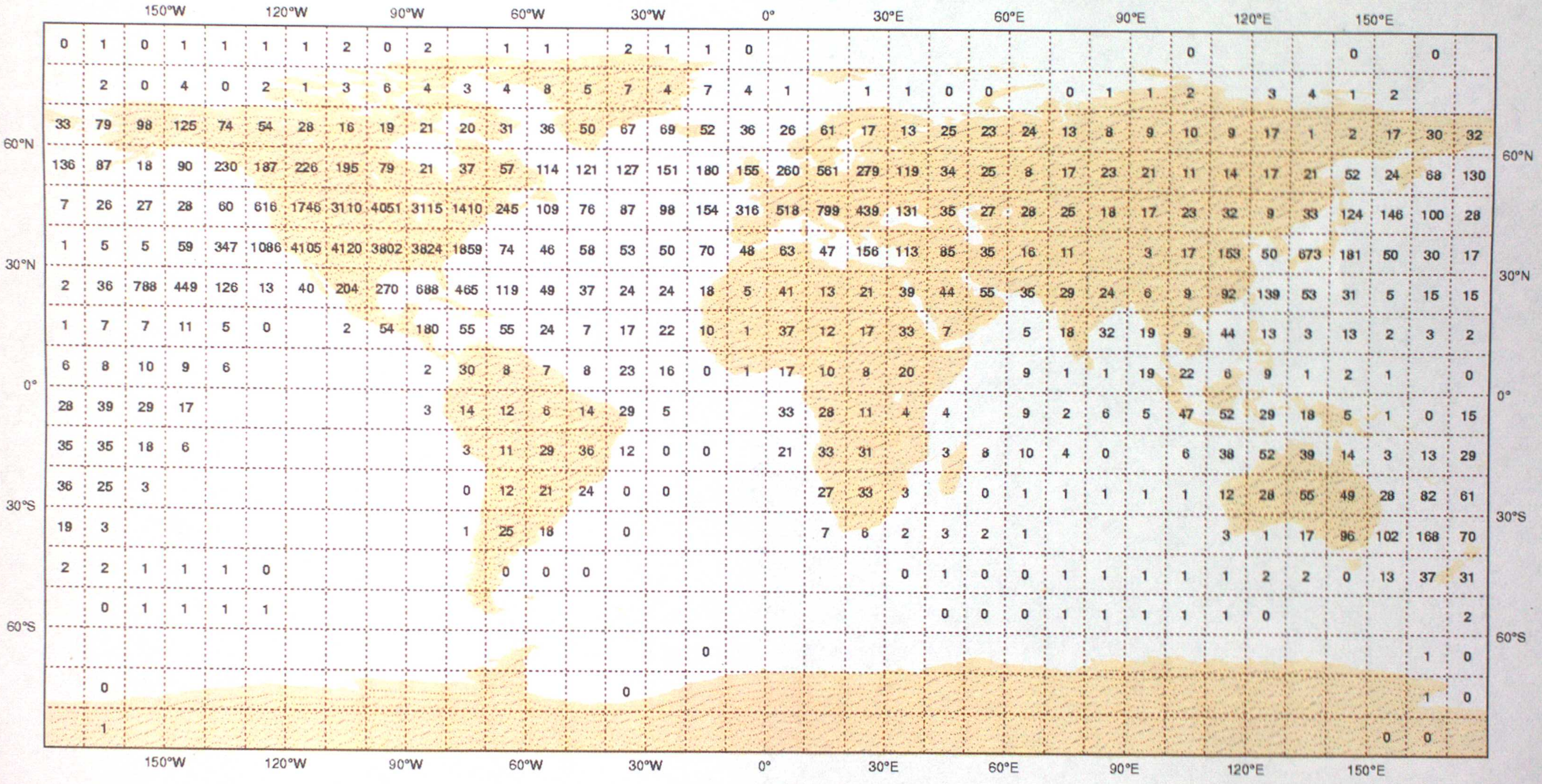
	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	438	0	45	1.7	-0.2	423	0	44	0	6.0	0.8
ACA	50	0	10	1.2	0.2	43	0	9	0	9.6	-0.3
AFR	94	3	12	1.6	-0.1	95	0	6	0	6.8	0.4
AMD	298	0	65	1.1	0.5	298	0	65	0	4.1	0.2
AMT	60	2	22	2.5	-0.2	59	0	29	0	14.5	0.7
ANZ	200	0	18	1.0	0.2	201	0	18	0	6.4	-0.3
AXF	31	0	58	0.7	0.0	31	0	58	0	6.2	1.3
CFC	61	5	11	1.2	0.4	53	0	9	0	7.6	0.5
CFG	34	0	9	0.9	0.2	34	0	18	0	14.9	-0.5
CKS	28	0	11	1.5	0.2	20	0	20	0	7.2	1.5
CWC	49	0	2	1.9	1.1	30	0	3	0	7.5	-0.7
DAL	164	1	43	1.6	-0.1	153	1	46	0	6.4	-0.5
DLH	313	0	7	1.3	0.1	309	0	9	0	6.5	0.8
EIA	73	1	19	1.3	0.2	69	0	100	0	24.4	-1.8
FDX	605	0	29	1.2	0.3	465	0	29	0	6.6	0.7
GAF	46	4	7	1.6	-0.1	23	0	4	0	9.6	1.9
GCO	40	0	5	1.0	-0.1	40	0	10	0	7.2	-0.3
HAL	569	0	41	1.6	0.3	564	0	41	0	6.6	0.8
IBE	46	0	7	1.6	0.1	44	0	7	0	7.6	-0.7
ICE	79	5	9	1.6	-0.5	66	0	6	0	8.2	-1.5
JAL	85	2	5	1.5	0.5	87	0	1	0	6.3	1.4
JAZ	57	2	14	1.0	0.8	57	0	14	0	6.3	1.2
KAL	30	3	30	1.6	-0.1	30	0	30	0	11.9	0.8
KIW	80	4	41	2.9	1.8	87	0	17	0	9.8	-1.5
KLM	60	0	2	1.3	-0.1	40	0	5	0	9.3	-0.7
LAN	33	6	12	1.2	0.0	30	0	10	0	6.2	1.0
MAS	39	0	26	1.5	-0.7	41	0	27	0	6.0	0.4
MPH	73	0	1	0.9	0.2	59	0	2	0	4.3	0.4
NCA	103	0	4	1.6	-0.2	80	1	8	0	6.8	-0.2
NWA	373	1	15	1.6	0.2	376	1	19	0	10.1	-0.4
NZL	19710	0	55	1.2	0.2	19708	0	55	0	4.7	0.0
OAE	44	0	14	1.5	-0.7	26	0	38	0	15.5	-0.1
PAC	63	0	8	1.3	-0.3	42	0	7	0	5.9	0.2
PAL	35	3	23	1.0	0.0	35	0	23	0	9.4	0.9
QFA	198	2	40	1.2	0.0	201	0	39	0	5.6	0.3
RCH	40	0	100	2.0	1.0	31	0	100	0	15.7	0.5
RRR	108	14	27	2.4	0.9	111	0	20	0	10.4	-0.6
SFR	49	2	33	3.2	1.8	45	0	7	0	12.8	-2.2
SIA	49	0	2	1.1	0.5	49	0	2	0	4.2	-0.4
SKI	215	4	39	3.2	0.0	272	1	45	0	15.5	0.8
SVH	13418	0	59	1.5	0.9	13418	0	59	0	4.0	0.2
THA	21	0	5	1.1	0.4	22	0	5	0	4.7	0.6
THT	33	0	64	1.2	-0.2	34	0	62	0	5.9	0.0
UAE	66	0	2	1.0	0.6	67	0	1	0	5.0	-0.3
UAL	190967	0	98	1.0	-0.2	190495	0	98	0	4.1	0.4
UPS	268	1	44	2.0	0.2	264	0	45	0	8.9	-0.1
VDA	41	2	17	2.3	-0.8	43	0	30	0	17.7	-0.7
VVP	47	4	38	4.1	2.0	46	0	37	0	11.5	0.7
WOA	164	0	15	1.9	0.3	130	0	35	0	14.9	3.2

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	26966	0	49	1.3	0.5	26970	0	49	0	4.3	-0.1
B-	46649	0	74	1.5	0.7	46649	0	73	0	4.1	0.2
EU	590400	0	69	1.1	0.2	587124	0	69	0	3.9	0.1
HK	3851	0	73	1.5	0.7	3851	0	74	0	4.6	-0.4
JP	55908	0	57	1.2	0.5	55908	0	56	0	4.2	0.2
MK	2406	0	48	1.4	0.8	2374	0	48	0	4.2	0.9

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SA	4495	1	60	1.9	0.2	4496	0	71	0	5.1	0.3

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
N	35	3	14	2.6	0.3	21	0	19	0	11.4	3.9
US ACARS	1367400	0	78	1.2	0.3	1364017	0	79	0	4.3	0.3

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. NOVEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 51485



0	1	0	1	1	1	1	2	0	2		1	1		2	1	1	0											0				0		0	
	2	0	4	0	2	1	3	6	4	3	4	8	5	7	4	7	4	1		1	1	0	0		0	1	1	2		3	4	1	2		
33	79	98	125	74	54	28	16	19	21	20	31	36	50	67	69	52	36	26	61	17	13	25	23	24	13	8	9	10	9	17	1	2	17	30	32
136	87	18	90	230	187	226	195	79	21	37	57	114	121	127	151	180	155	260	561	279	119	34	25	8	17	23	21	11	14	17	21	52	24	68	130
7	26	27	28	60	616	1746	3110	4051	3115	1410	245	109	76	87	98	154	316	518	799	439	131	35	27	28	25	18	17	23	32	9	33	124	146	100	28
1	5	5	59	347	1086	4105	4120	3802	3824	1859	74	46	58	53	50	70	48	63	47	156	113	85	35	16	11		3	17	153	50	673	181	50	30	17
2	36	788	449	126	13	40	204	270	688	465	119	49	37	24	24	18	5	41	13	21	39	44	55	35	29	24	6	9	92	139	53	31	5	15	15
1	7	7	11	5	0		2	54	180	55	55	24	7	17	22	10	1	37	12	17	33	7		5	18	32	19	9	44	13	3	13	2	3	2
6	8	10	9	6					2	30	8	7	8	23	16	0	1	17	10	8	20			9	1	1	19	22	6	9	1	2	1		0
28	39	29	17						3	14	12	6	14	29	5			33	28	11	4	4		9	2	6	5	47	52	29	18	5	1	0	15
35	35	18	6							3	11	29	36	12	0	0		21	33	31		3	8	10	4	0		6	38	52	39	14	3	13	29
36	25	3								0	12	21	24	0	0				27	33	3		0	1	1	1	1	1	12	28	55	49	28	82	61
19	3									1	25	18		0					7	6	2	3	2	1					3	1	17	96	102	168	70
2	2	1	1	1	0						0	0	0								0	1	0	0	1	1	1	1	1	2	2	0	13	37	31
	0	1	1	1	1																	0	0	0	1	1	1	1	1	0					2
																0																		1	0
	0														0																			1	0
	1																																0	0	

Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. NOVEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 77351

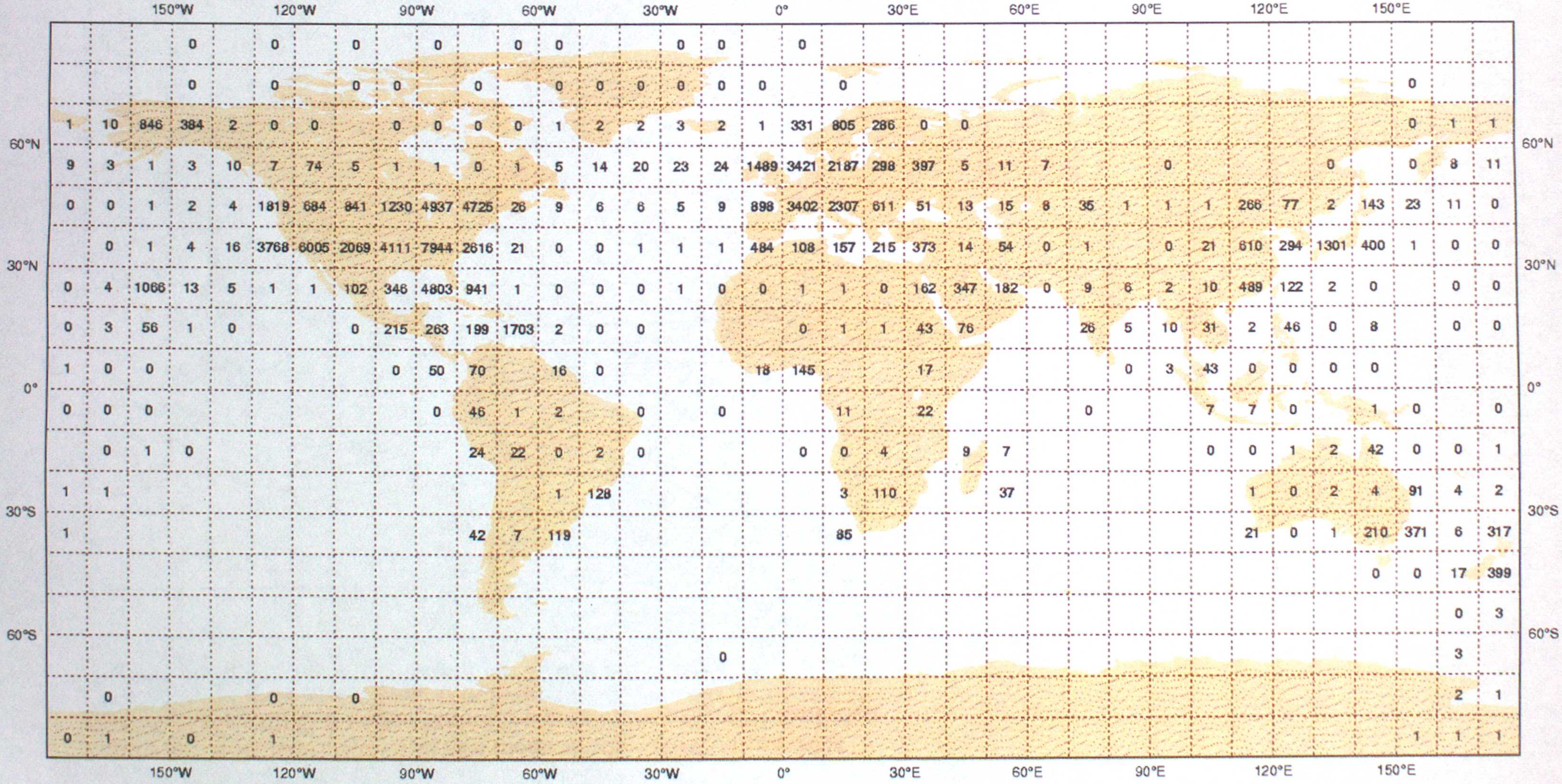

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0
1 10 846 384 2 0 0 0 0 0 0 1 2 2 3 2 1 331 805 286 0 0 0 1 1
9 3 1 3 10 7 74 5 1 1 0 1 5 14 20 23 24 1489 3421 2187 298 397 5 11 7 0 0 0 8 11
0 0 1 2 4 1819 684 841 1230 4937 4725 26 9 6 6 5 9 898 3402 2307 611 51 13 15 8 35 1 1 1 266 77 2 143 23 11 0
0 1 4 16 3768 6005 2069 4111 7944 2616 21 0 0 1 1 1 484 108 157 215 373 14 54 0 1 0 21 610 294 1301 400 1 0 0
0 4 1066 13 5 1 1 102 346 4803 941 1 0 0 0 1 0 0 1 1 0 162 347 182 0 9 6 2 10 489 122 2 0 0 0
0 3 56 1 0 0 215 263 199 1703 2 0 0 0 1 1 43 76 26 5 10 31 2 46 0 8 0 0
1 0 0 0 50 70 16 0 18 145 17 0 3 43 0 0 0 0
0 0 0 0 46 1 2 0 0 11 22 0 7 7 0 1 0 0
0 1 0 24 22 0 2 0 0 0 4 9 7 0 0 1 2 42 0 0 1
1 1 1 128 3 110 37 1 0 2 4 91 4 2
1 42 7 119 85 21 0 1 210 371 6 317
0 0 17 399
0 3
0 3
0 0 0 2 1
0 1 0 1 1 1 1

Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. NOVEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

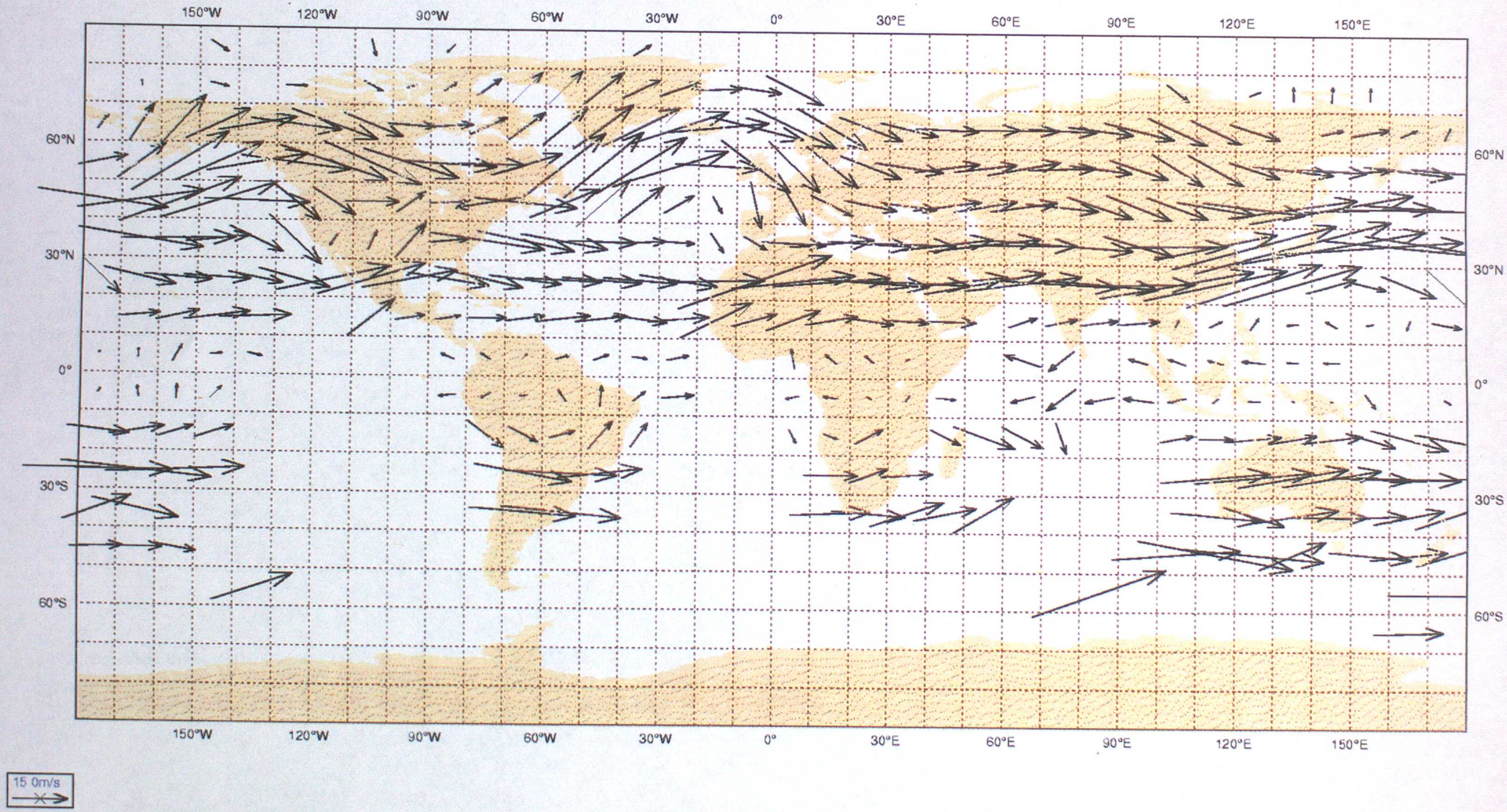

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15 0m/s

Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. NOVEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

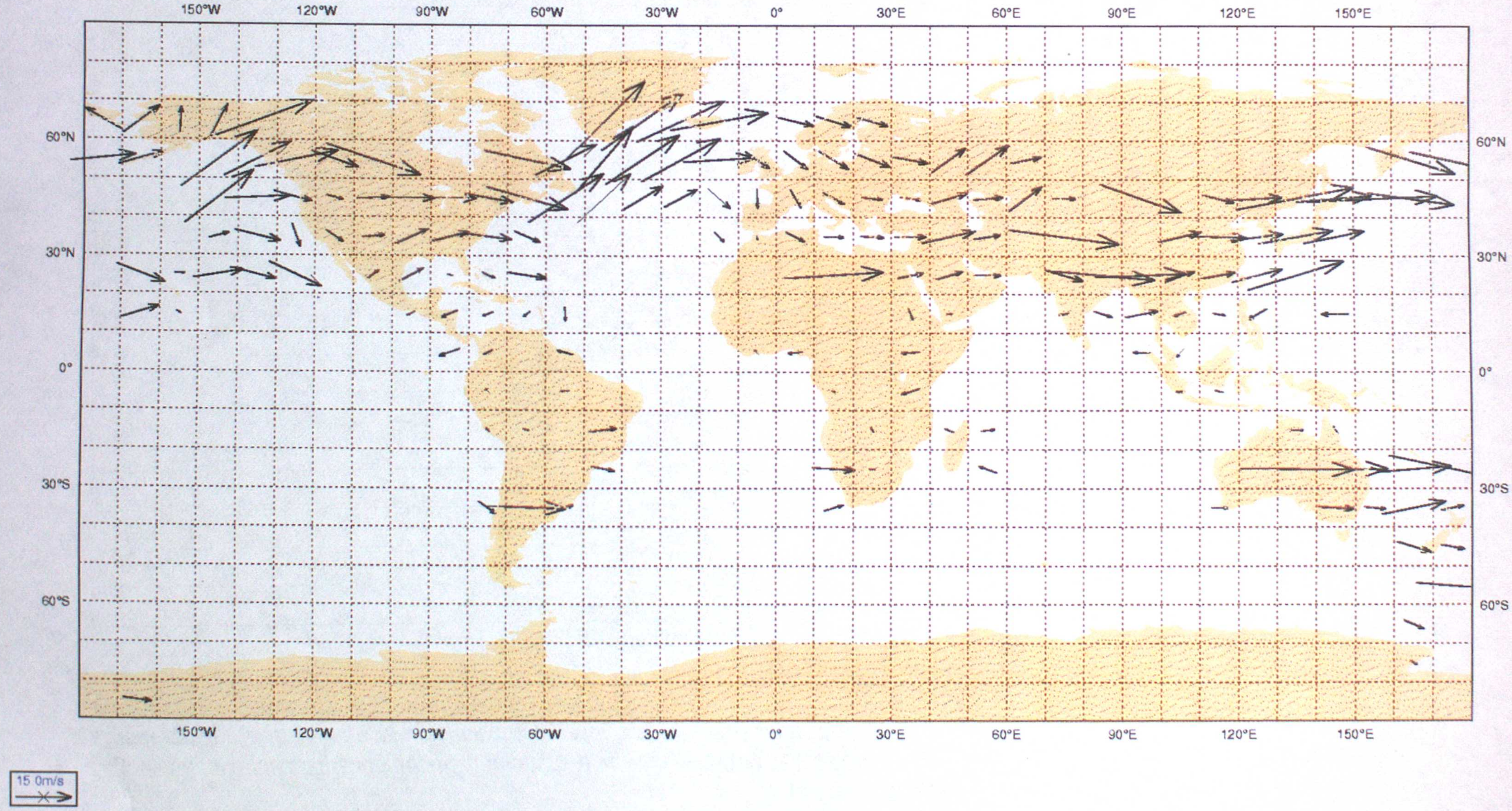

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15 0m/s

Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. NOVEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

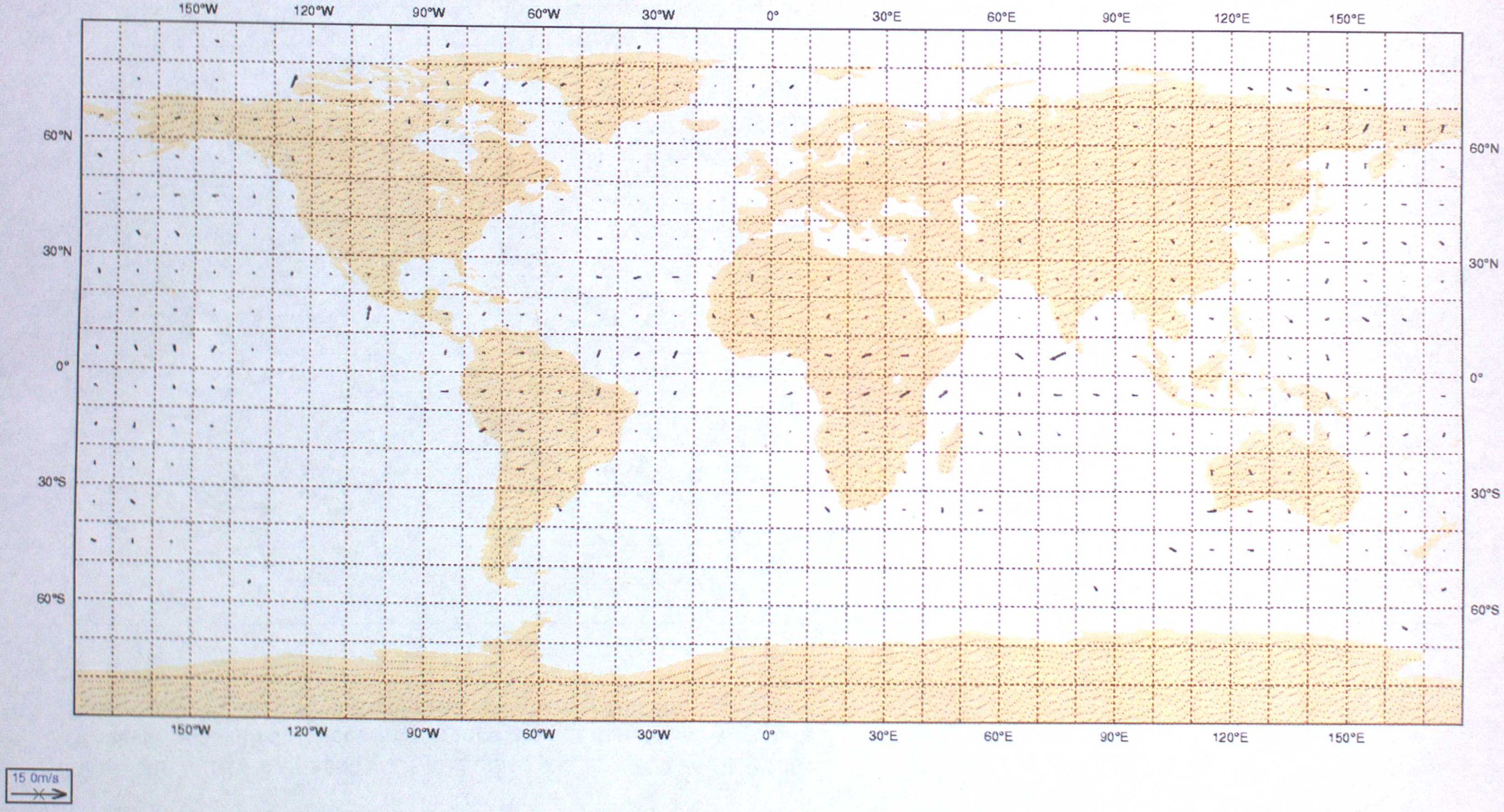

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15 0m/s

Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. NOVEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

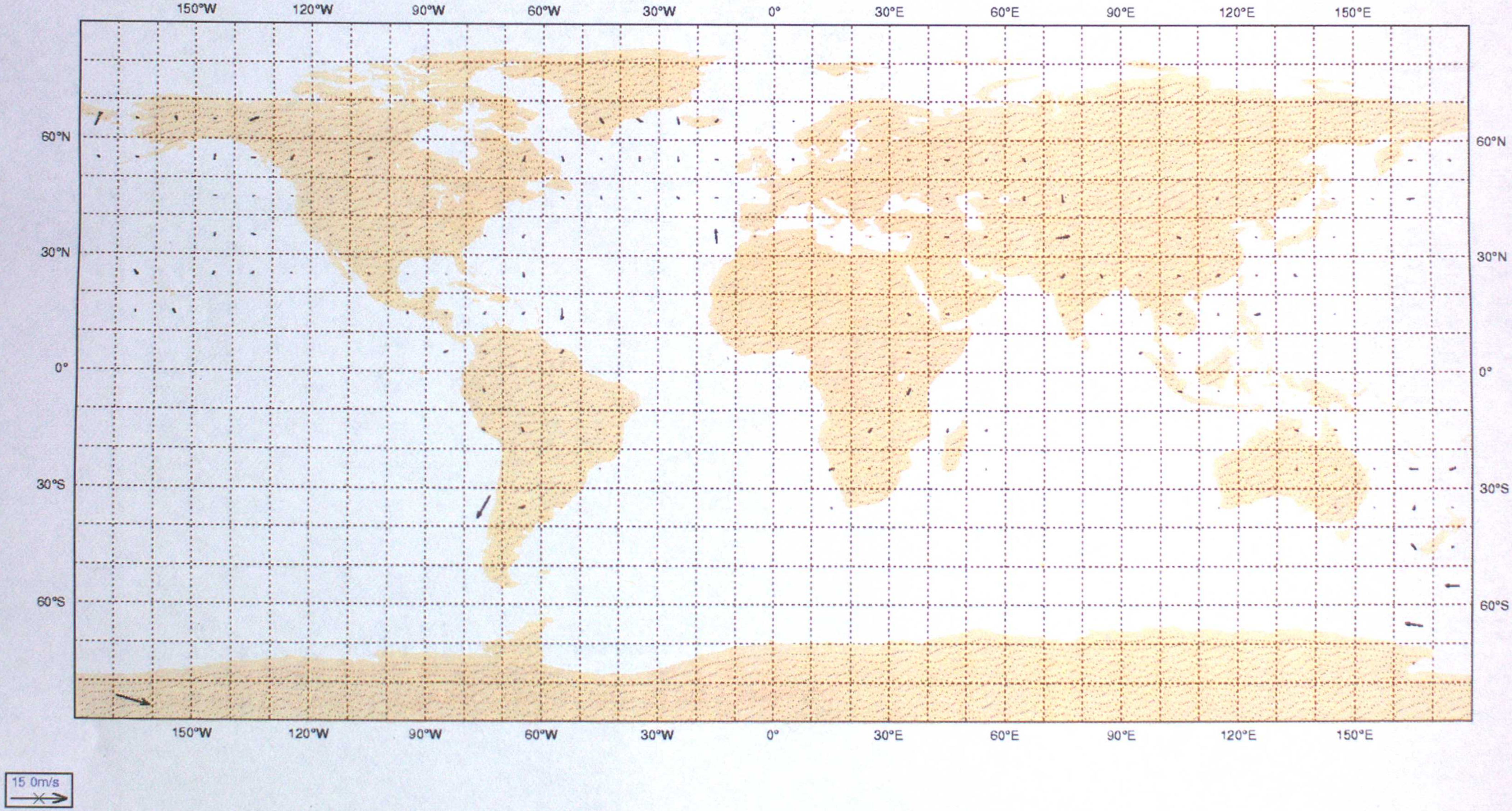

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). NOVEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

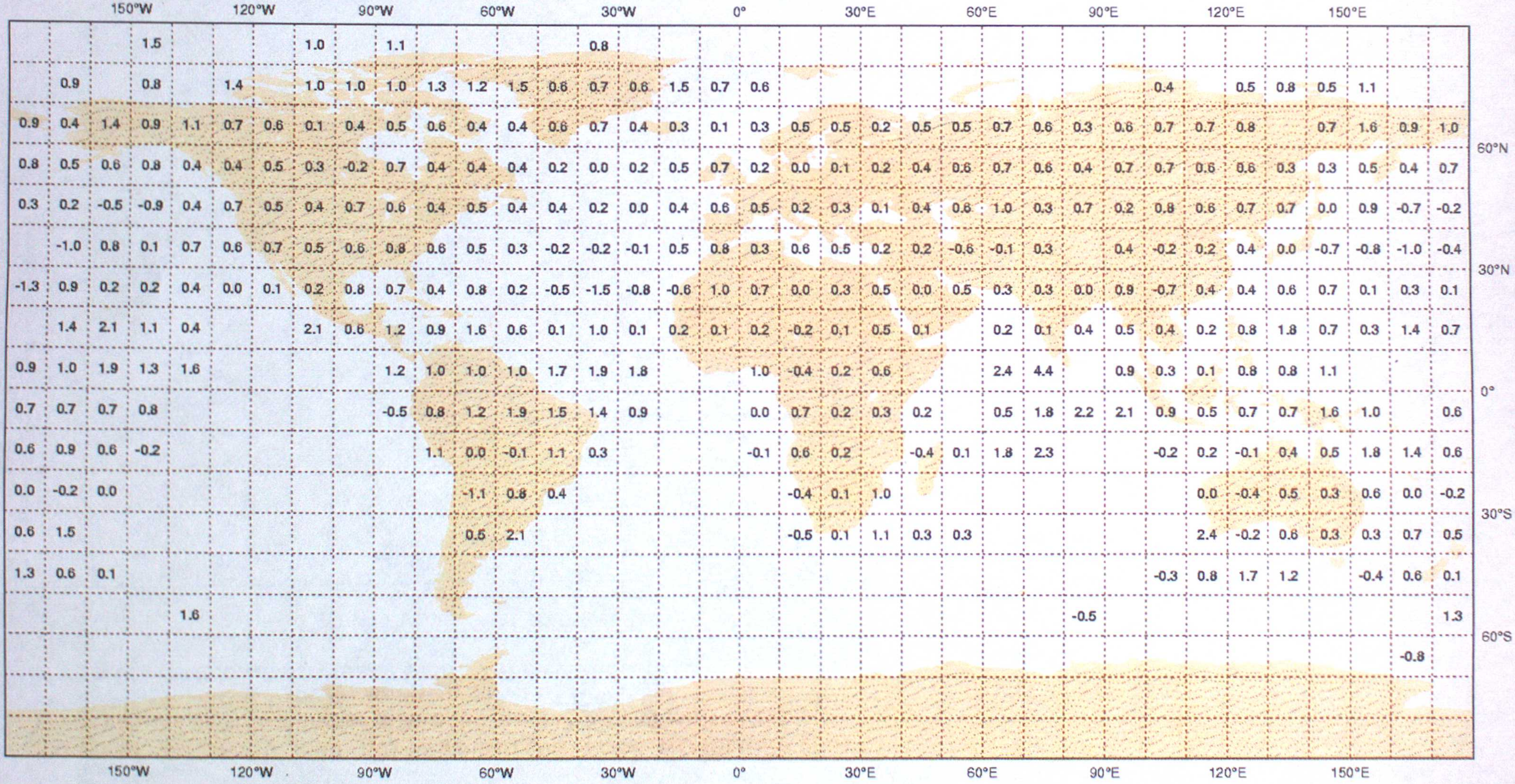

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
1.5 1.0 1.1 0.8
0.9 0.8 1.4 1.0 1.0 1.0 1.3 1.2 1.5 0.6 0.7 0.6 1.5 0.7 0.6 0.4 0.5 0.8 0.5 1.1
0.9 0.4 1.4 0.9 1.1 0.7 0.6 0.1 0.4 0.5 0.6 0.4 0.4 0.6 0.7 0.4 0.3 0.1 0.3 0.5 0.5 0.2 0.5 0.5 0.7 0.6 0.3 0.6 0.7 0.7 0.8 0.7 1.6 0.9 1.0
0.8 0.5 0.6 0.8 0.4 0.4 0.5 0.3 -0.2 0.7 0.4 0.4 0.4 0.2 0.0 0.2 0.5 0.7 0.2 0.0 0.1 0.2 0.4 0.6 0.7 0.6 0.4 0.7 0.7 0.6 0.6 0.3 0.3 0.5 0.4 0.7
0.3 0.2 -0.5 -0.9 0.4 0.7 0.5 0.4 0.7 0.6 0.4 0.5 0.4 0.4 0.2 0.0 0.4 0.6 0.5 0.2 0.3 0.1 0.4 0.6 1.0 0.3 0.7 0.2 0.8 0.6 0.7 0.7 0.0 0.9 -0.7 -0.2
-1.0 0.8 0.1 0.7 0.6 0.7 0.5 0.6 0.8 0.6 0.5 0.3 -0.2 -0.2 -0.1 0.5 0.8 0.3 0.6 0.5 0.2 0.2 -0.6 -0.1 0.3 0.4 -0.2 0.2 0.4 0.0 -0.7 -0.8 -1.0 -0.4
-1.3 0.9 0.2 0.2 0.4 0.0 0.1 0.2 0.8 0.7 0.4 0.8 0.2 -0.5 -1.5 -0.8 -0.6 1.0 0.7 0.0 0.3 0.5 0.0 0.5 0.3 0.3 0.0 0.9 -0.7 0.4 0.4 0.6 0.7 0.1 0.3 0.1
1.4 2.1 1.1 0.4 2.1 0.6 1.2 0.9 1.6 0.6 0.1 1.0 0.1 0.2 0.1 0.2 -0.2 0.1 0.5 0.1 0.2 0.1 0.4 0.5 0.4 0.2 0.8 1.8 0.7 0.3 1.4 0.7
0.9 1.0 1.9 1.3 1.6 1.2 1.0 1.0 1.0 1.7 1.9 1.8 1.0 -0.4 0.2 0.6 2.4 4.4 0.9 0.3 0.1 0.8 0.8 1.1
0.7 0.7 0.7 0.8 -0.5 0.8 1.2 1.9 1.5 1.4 0.9 0.0 0.7 0.2 0.3 0.2 0.5 1.8 2.2 2.1 0.9 0.5 0.7 0.7 1.6 1.0 0.6
0.6 0.9 0.6 -0.2 1.1 0.0 -0.1 1.1 0.3 -0.1 0.6 0.2 -0.4 0.1 1.8 2.3 -0.2 0.2 -0.1 0.4 0.5 1.8 1.4 0.6
0.0 -0.2 0.0 -1.1 0.8 0.4 -0.4 0.1 1.0 0.0 -0.4 0.5 0.3 0.6 0.0 -0.2
0.6 1.5 0.5 2.1 -0.5 0.1 1.1 0.3 0.3 2.4 -0.2 0.6 0.3 0.3 0.7 0.5
1.3 0.6 0.1 -0.3 0.8 1.7 1.2 -0.4 0.6 0.1
1.6 -0.5 1.3
-0.8

Figure 6b. AIRCRAFT 1000 - 301 hPa mean O-B speeds (ms-1). NOVEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

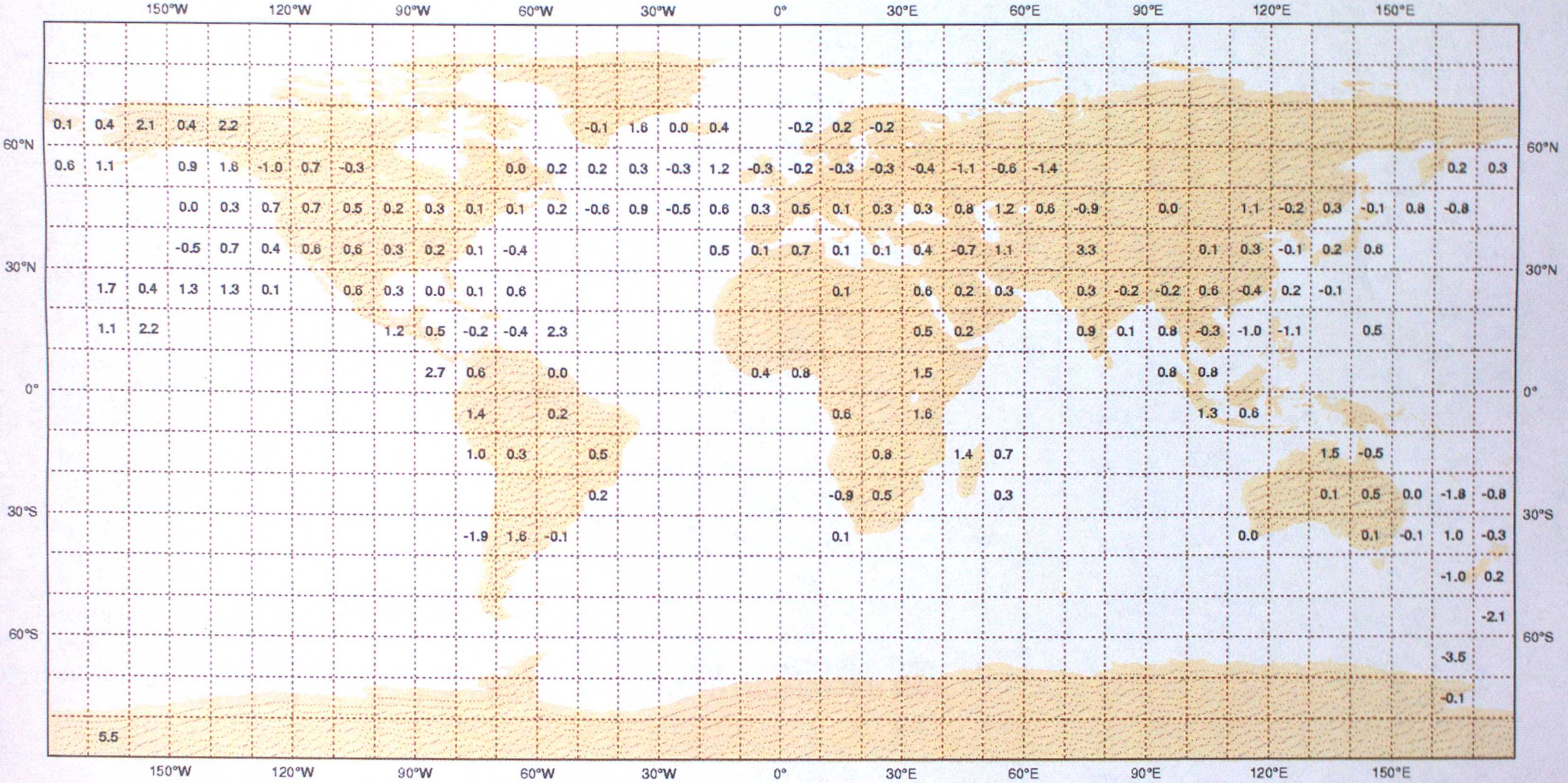

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0.1 0.4 2.1 0.4 2.2 -0.1 1.6 0.0 0.4 -0.2 0.2 -0.2
0.6 1.1 0.9 1.6 -1.0 0.7 -0.3 0.0 0.2 0.2 0.3 -0.3 1.2 -0.3 -0.2 -0.3 -0.3 -0.4 -1.1 -0.6 -1.4 0.2 0.3
0.0 0.3 0.7 0.7 0.5 0.2 0.3 0.1 0.1 0.2 -0.6 0.9 -0.5 0.6 0.3 0.5 0.1 0.3 0.3 0.8 1.2 0.6 -0.9 0.0 1.1 -0.2 0.3 -0.1 0.8 -0.8
-0.5 0.7 0.4 0.6 0.6 0.3 0.2 0.1 -0.4 0.5 0.1 0.7 0.1 0.1 0.4 -0.7 1.1 3.3 0.1 0.3 -0.1 0.2 0.6
1.7 0.4 1.3 1.3 0.1 0.6 0.3 0.0 0.1 0.6 0.1 0.6 0.2 0.3 0.3 -0.2 -0.2 0.6 -0.4 0.2 -0.1
1.1 2.2 1.2 0.5 -0.2 -0.4 2.3 0.5 0.2 0.9 0.1 0.8 -0.3 -1.0 -1.1 0.5
2.7 0.6 0.0 0.4 0.8 1.5 0.8 0.8
1.4 0.2 0.6 1.6 1.3 0.6
1.0 0.3 0.5 0.8 1.4 0.7 1.5 -0.5
0.2 -0.9 0.5 0.3 0.1 0.5 0.0 -1.8 -0.8
-1.9 1.6 -0.1 0.1 0.0 0.1 -0.1 1.0 -0.3
-1.0 0.2
-2.1
-3.5
-0.1
5.5

Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). NOVEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

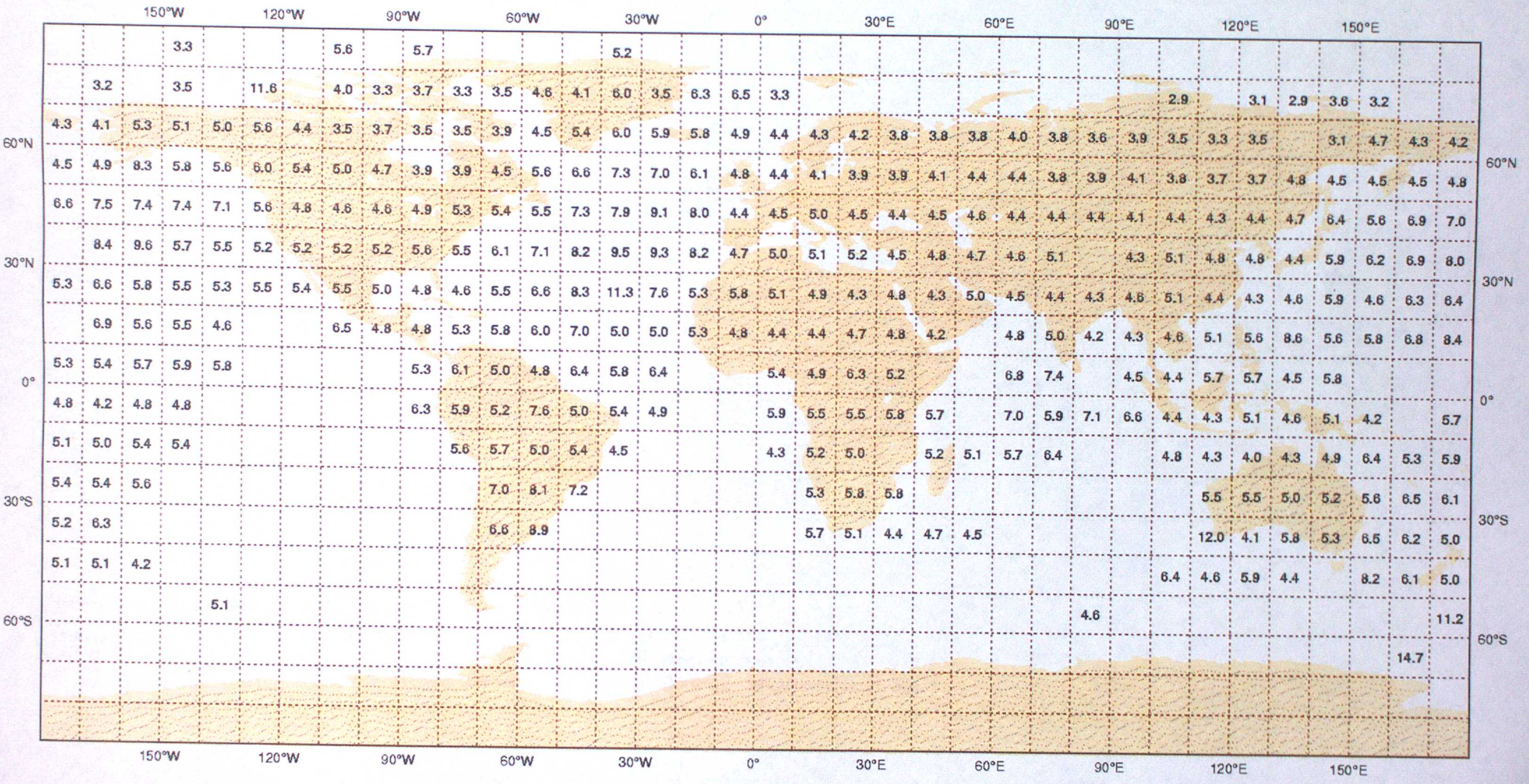

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
3.3 5.6 5.7 5.2
3.2 3.5 11.6 4.0 3.3 3.7 3.3 3.5 4.6 4.1 6.0 3.5 6.3 6.5 3.3 2.9 3.1 2.9 3.6 3.2
4.3 4.1 5.3 5.1 5.0 5.6 4.4 3.5 3.7 3.5 3.5 3.9 4.5 5.4 6.0 5.9 5.8 4.9 4.4 4.3 4.2 3.8 3.8 3.8 4.0 3.8 3.6 3.9 3.5 3.3 3.5 3.1 4.7 4.3 4.2
4.5 4.9 8.3 5.8 5.6 6.0 5.4 5.0 4.7 3.9 3.9 4.5 5.6 6.6 7.3 7.0 6.1 4.8 4.4 4.1 3.9 3.9 4.1 4.4 4.4 3.8 3.9 4.1 3.8 3.7 3.7 4.8 4.5 4.5 4.5 4.8
6.6 7.5 7.4 7.4 7.1 5.6 4.8 4.6 4.6 4.9 5.3 5.4 5.5 7.3 7.9 9.1 8.0 4.4 4.5 5.0 4.5 4.4 4.5 4.6 4.4 4.4 4.4 4.1 4.4 4.3 4.4 4.7 6.4 5.6 6.9 7.0
8.4 9.6 5.7 5.5 5.2 5.2 5.2 5.2 5.6 5.5 6.1 7.1 8.2 9.5 9.3 8.2 4.7 5.0 5.1 5.2 4.5 4.8 4.7 4.6 5.1 4.3 5.1 4.8 4.8 4.4 5.9 6.2 6.9 8.0
5.3 6.6 5.8 5.5 5.3 5.5 5.4 5.5 5.0 4.8 4.6 5.5 6.6 8.3 11.3 7.6 5.3 5.8 5.1 4.9 4.3 4.8 4.3 5.0 4.5 4.4 4.3 4.6 5.1 4.4 4.3 4.6 5.9 4.6 6.3 6.4
6.9 5.6 5.5 4.6 6.5 4.8 4.8 5.3 5.8 6.0 7.0 5.0 5.0 5.3 4.8 4.4 4.4 4.7 4.8 4.2 4.8 5.0 4.2 4.3 4.6 5.1 5.6 8.6 5.6 5.8 6.8 8.4
5.3 5.4 5.7 5.9 5.8 5.3 6.1 5.0 4.8 6.4 5.8 6.4 5.4 4.9 6.3 5.2 6.8 7.4 4.5 4.4 5.7 5.7 4.5 5.8
4.8 4.2 4.8 4.8 6.3 5.9 5.2 7.6 5.0 5.4 4.9 5.9 5.5 5.5 5.8 5.7 7.0 5.9 7.1 6.6 4.4 4.3 5.1 4.6 5.1 4.2 5.7
5.1 5.0 5.4 5.4 5.6 5.7 5.0 5.4 4.5 4.3 5.2 5.0 5.2 5.1 5.7 6.4 4.8 4.3 4.0 4.3 4.9 6.4 5.3 5.9
5.4 5.4 5.6 7.0 8.1 7.2 5.3 5.8 5.8 5.5 5.5 5.0 5.2 5.6 6.5 6.1
5.2 6.3 6.6 8.9 5.7 5.1 4.4 4.7 4.5 12.0 4.1 5.8 5.3 6.5 6.2 5.0
5.1 5.1 4.2 6.4 4.6 5.9 4.4 8.2 6.1 5.0
5.1 4.6 11.2
14.7

Figure 7b. AIRCRAFT 1000 - 301 hPa RMS O-B vector (ms-1). NOVEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

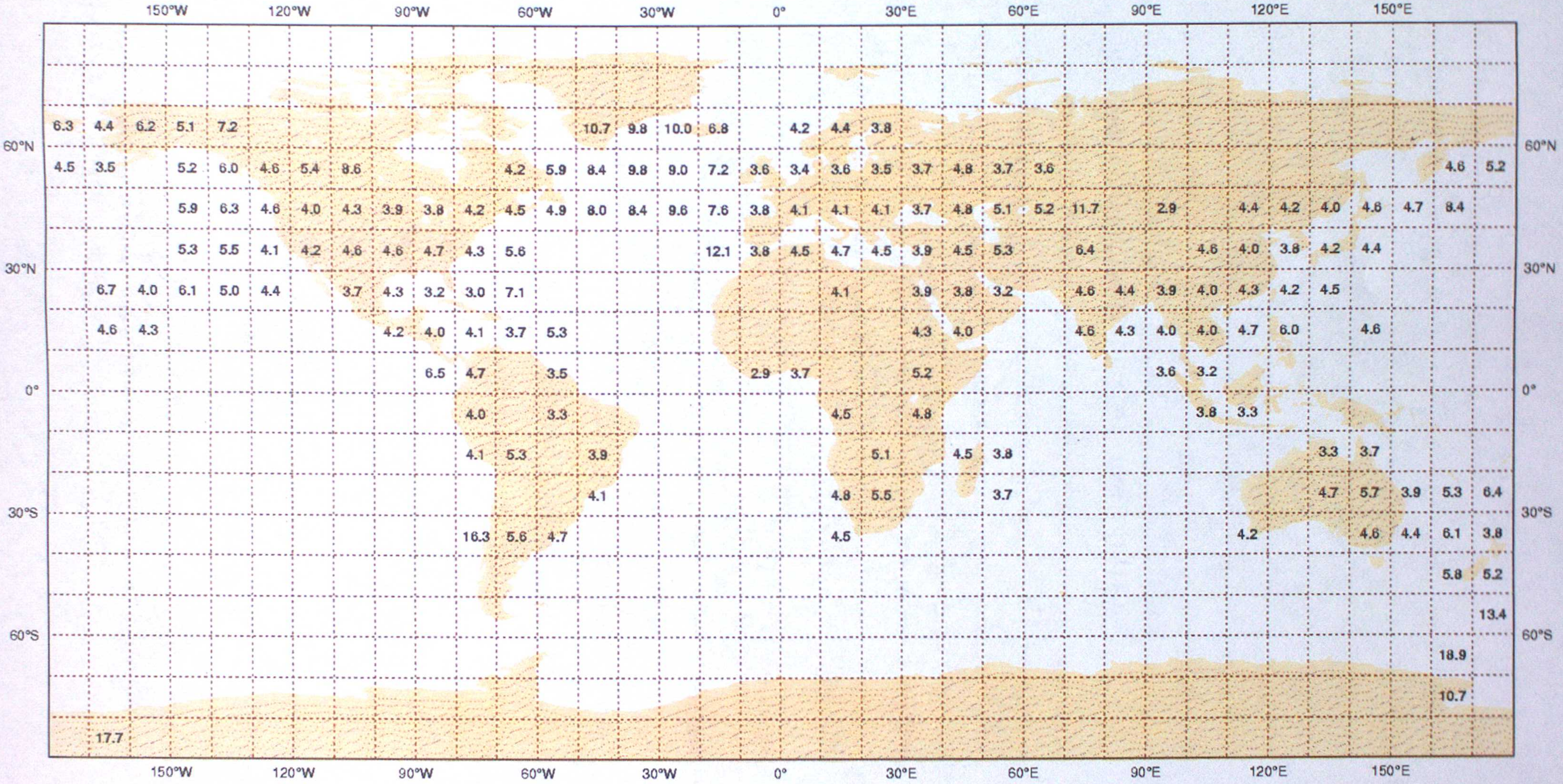

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
6.3 4.4 6.2 5.1 7.2 10.7 9.8 10.0 6.8 4.2 4.4 3.8
4.5 3.5 5.2 6.0 4.6 5.4 8.6 4.2 5.9 8.4 9.8 9.0 7.2 3.6 3.4 3.6 3.5 3.7 4.8 3.7 3.6 4.6 5.2
5.9 6.3 4.6 4.0 4.3 3.9 3.8 4.2 4.5 4.9 8.0 8.4 9.6 7.6 3.8 4.1 4.1 4.1 3.7 4.8 5.1 5.2 11.7 2.9 4.4 4.2 4.0 4.6 4.7 8.4
5.3 5.5 4.1 4.2 4.6 4.6 4.7 4.3 5.6 12.1 3.8 4.5 4.7 4.5 3.9 4.5 5.3 6.4 4.6 4.0 3.8 4.2 4.4
6.7 4.0 6.1 5.0 4.4 3.7 4.3 3.2 3.0 7.1 4.1 3.9 3.8 3.2 4.6 4.4 3.9 4.0 4.3 4.2 4.5
4.6 4.3 4.2 4.0 4.1 3.7 5.3 4.3 4.0 4.6 4.3 4.0 4.0 4.7 6.0 4.6
6.5 4.7 3.5 2.9 3.7 5.2 3.6 3.2
4.0 3.3 4.5 4.8 3.8 3.3
4.1 5.3 3.9 5.1 4.5 3.8 3.3 3.7
4.1 4.8 5.5 3.7 4.7 5.7 3.9 5.3 6.4
16.3 5.6 4.7 4.5 4.2 4.6 4.4 6.1 3.8
5.8 5.2
13.4
18.9
10.7
17.7

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures

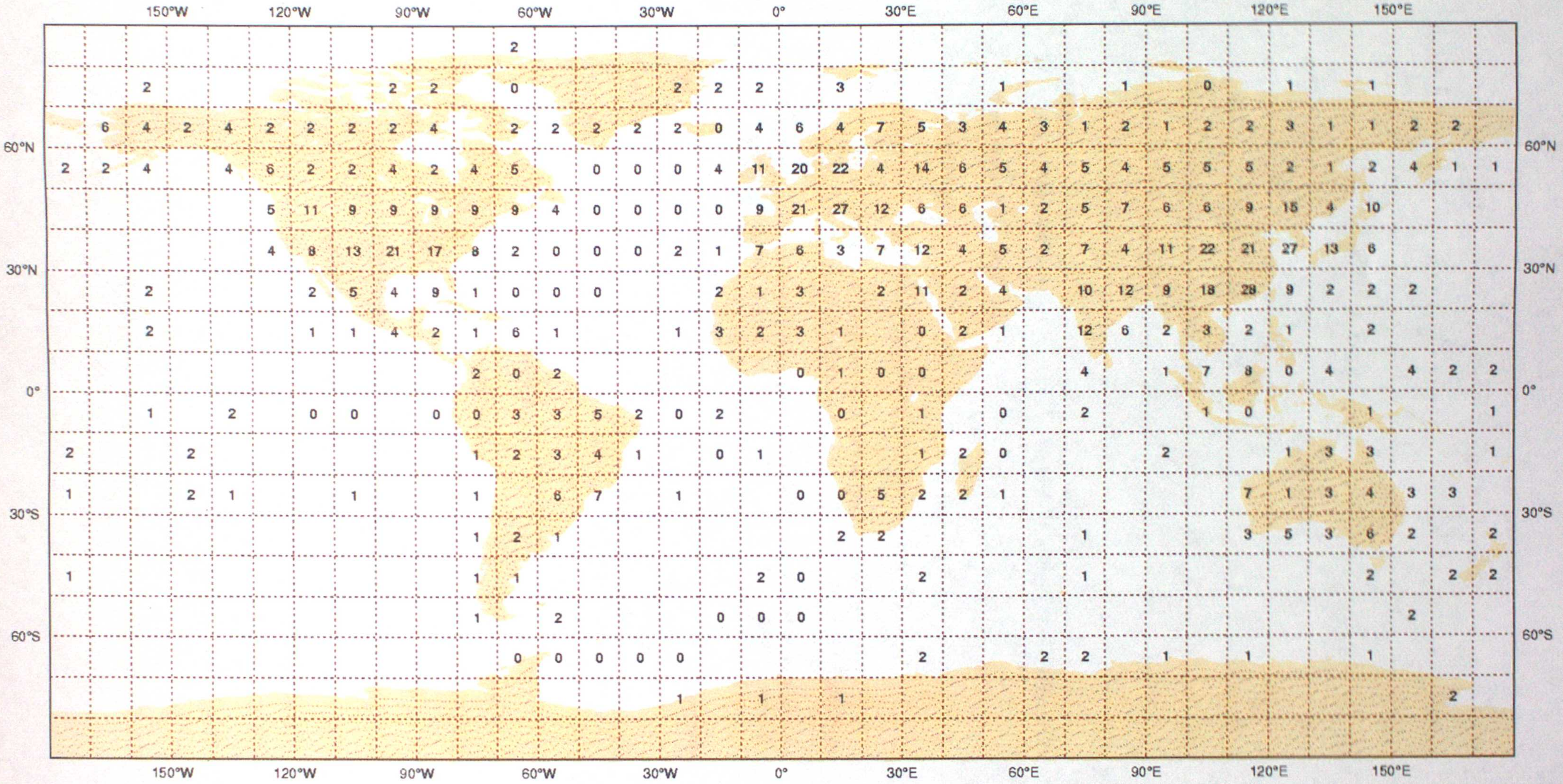
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
21824	12	Z	50	72/ 129	11	0	168.4	248.6	300.3	10
21946	12	Z	30	71/ 148	19	0	111.9	-182.5	214.1	8
24266	00	Z	1000	68/ 133	3	23	14.3	-73.7	75.0	7
24343	00	Z	1000	67/ 123	23	4	30.2	-24.4	38.9	11
28722	00	Z	1000	55/ 56	21	5	34.8	-30.5	46.2	6
30054	12	Z	70	59/ 113	20	2	48.8	-290.2	294.3	9
31369	00	Z	1000	53/ 141	3	14	9.0	-89.7	90.1	4
34247	12	Z	50	50/ 41	27	0	42.4	155.7	161.4	7
42027	12	Z	150	34/ 75	12	0	111.5	26.9	114.7	5
42101	00	Z	150	30/ 76	20	0	82.0	-110.3	137.4	5
42101	12	Z	150	30/ 76	23	0	78.1	-89.2	118.6	6
42182	00	Z	1000	29/ 77	14	12	10.4	-84.5	85.1	9
42182	12	Z	1000	29/ 77	8	19	10.3	-90.9	91.5	11
42314	00	Z	150	27/ 95	19	0	55.5	-155.8	165.4	7
42314	12	Z	200	27/ 95	14	0	79.2	-151.8	171.2	5
42339	00	Z	1000	26/ 73	2	23	1.5	-95.5	95.5	8
42339	12	Z	1000	26/ 73	1	23	0.0	-52.0	52.0	5
42361	00	Z	1000	26/ 78	21	3	8.6	-84.6	85.1	4
42361	12	Z	1000	26/ 78	8	16	15.9	-80.0	81.6	6
42369	00	Z	150	27/ 81	20	0	64.7	-165.9	178.1	9
42369	12	Z	200	27/ 81	16	3	76.7	-110.8	134.8	8
42379	12	Z	200	27/ 83	14	0	119.7	18.5	121.2	7
42410	12	Z	1000	26/ 92	1	22	0.0	-86.0	86.0	4
42492	00	Z	150	26/ 85	13	1	67.0	-122.8	139.9	6
42492	12	Z	150	26/ 85	13	1	91.4	-116.2	147.8	5
42647	00	Z	150	23/ 73	14	0	62.3	-136.7	150.3	4
42667	00	Z	200	23/ 77	20	0	53.8	-115.8	127.7	5
42701	00	Z	200	23/ 85	20	0	64.1	-84.9	106.4	4
42701	12	Z	100	23/ 85	12	0	119.7	-146.2	189.0	5
42724	00	Z	150	24/ 91	22	0	51.8	-127.4	137.5	4
42724	12	Z	150	24/ 91	20	1	40.4	-195.2	199.4	7
42809	12	Z	150	23/ 88	22	0	56.6	-155.3	165.3	6
42867	00	Z	200	21/ 79	17	2	84.6	-113.0	141.2	7
42867	12	Z	200	21/ 79	20	0	76.1	-81.9	111.8	5
42874	00	Z	200	21/ 82	15	0	65.5	-118.5	135.4	4
42874	12	Z	200	21/ 82	12	0	62.7	-107.6	124.5	4
42971	12	Z	150	20/ 86	9	1	55.4	-143.4	153.8	4
43003	00	Z	200	19/ 73	20	1	67.6	-152.4	166.7	11
43003	12	Z	1000	19/ 73	26	1	10.4	-53.0	54.0	9
43014	00	Z	250	20/ 75	18	1	75.2	-31.1	81.4	6
43014	12	Z	150	20/ 75	10	1	136.6	-94.8	166.3	4
43041	00	Z	50	19/ 82	9	1	112.7	144.6	183.3	7
43128	00	Z	150	17/ 78	17	1	65.7	-140.2	154.8	4
43128	12	Z	150	17/ 78	13	0	112.7	-16.4	113.9	8
43150	00	Z	1000	18/ 83	26	0	29.1	-40.9	50.2	6
43150	12	Z	1000	18/ 83	22	3	36.5	-40.2	54.3	9
43185	00	Z	100	16/ 81	11	0	54.4	-166.5	175.1	4
43192	00	Z	1000	15/ 74	10	9	5.8	-93.5	93.7	6
43192	12	Z	1000	15/ 74	2	14	3.5	-95.5	95.6	7
43285	00	Z	100	13/ 75	11	0	95.0	-85.4	127.7	4
43285	12	Z	200	13/ 75	25	0	78.1	4.0	78.2	4
43295	00	Z	150	13/ 78	17	0	86.3	-61.8	106.2	5
43295	12	Z	100	13/ 78	11	1	111.8	-34.0	116.8	4
43333	12	Z	150	12/ 93	17	0	91.6	-144.8	171.3	5
43346	00	Z	150	11/ 80	14	2	92.6	-138.4	166.5	5
43346	12	Z	150	11/ 80	18	0	104.2	-84.2	134.0	5
43353	00	Z	1000	10/ 76	25	0	9.5	-77.0	77.5	6
43353	12	Z	1000	10/ 76	25	0	9.1	-85.3	85.8	5

43371	00	Z	200	8/ 77	22	0	76.5	-70.5	104.0	7
43371	12	Z	200	8/ 77	24	0	80.4	-37.8	88.8	4
43466	12	Z	300	7/ 80	3	0	112.6	6.7	112.8	5
72376	00	Z	300	37/-108	29	0	79.1	0.6	79.1	4
76723	12	Z	850	19/-111	22	0	6.3	43.6	44.0	5

Figure 8. TEMP 500 hPa geopotential mean daily count. NOVEMBER 2004
All hours
Global average number of observations in 24 hours = 1121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2 2 2 0 2 2 2 3 1 1 0 1 1
6 4 2 4 2 2 2 2 4 2 2 2 2 2 0 4 6 4 7 5 3 4 3 1 2 1 2 2 3 1 1 2 2
2 2 4 4 6 2 2 4 2 4 5 0 0 0 4 11 20 22 4 14 6 5 4 5 4 5 5 5 2 1 2 4 1 1
5 11 9 9 9 9 9 4 0 0 0 0 9 21 27 12 6 6 1 2 5 7 6 6 9 15 4 10
4 8 13 21 17 8 2 0 0 0 2 1 7 6 3 7 12 4 5 2 7 4 11 22 21 27 13 6
2 2 5 4 9 1 0 0 0 2 1 3 2 11 2 4 10 12 9 18 28 9 2 2 2
2 1 1 4 2 1 6 1 1 3 2 3 1 0 2 1 12 6 2 3 2 1 2
2 0 2 0 1 0 0 4 1 7 8 0 4 4 2 2
1 2 0 0 0 0 3 3 5 2 0 2 0 1 0 2 1 0 1 1
2 2 1 2 3 4 1 0 1 1 2 0 2 1 3 3 1
1 2 1 1 1 6 7 1 0 0 5 2 2 1 7 1 3 4 3 3
1 2 1 2 2 1 3 5 3 6 2 2
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1 1 1 2
150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

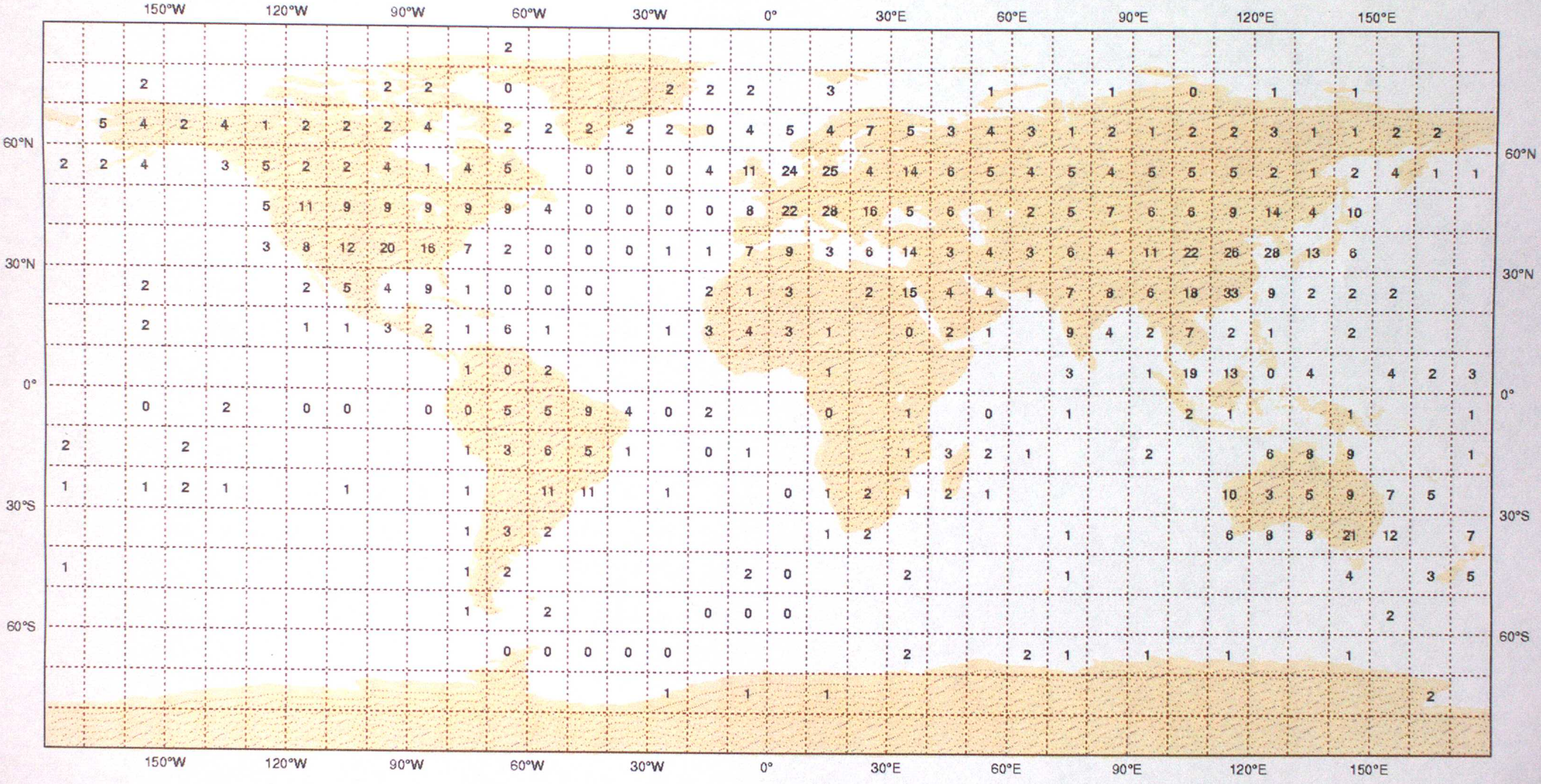
GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
06610	12	V	100	47/ 7	27	0	3	-2.7	3.0	20.3	1
28722	12	V	300	55/ 56	16	0	12	-0.9	5.3	17.9	3
40848	00	V	150	30/ 53	15	0	40	11.0	3.2	20.2	4
41506	12	V	400	36/ 72	10	0	100	-13.6	0.6	17.9	1
42182	00	V	100	29/ 77	21	0	100	-16.5	-4.3	18.3	2
42182	12	V	200	29/ 77	25	0	96	-11.4	-1.7	17.2	2
42361	00	V	300	26/ 78	14	0	92	4.1	9.5	16.5	1
42410	00	V	250	26/ 92	16	0	62	-6.4	3.6	16.6	1
42701	00	V	150	23/ 85	21	0	100	-14.8	1.6	16.5	2
42701	12	V	150	23/ 85	16	0	100	-15.5	1.3	17.1	2
47058	00	V	400	39/ 126	11	1	27	-2.0	-7.6	24.1	2
56146	00	V	150	32/ 100	15	0	100	11.4	2.6	16.0	1
60360	12	V	150	37/ 8	10	0	100	3.9	-3.0	15.7	1
60566	12	V	250	32/ 4	10	0	100	-12.5	-3.7	20.8	2
60571	00	V	150	31/ -2	18	0	5	-6.5	0.6	22.2	1
60590	12	V	500	31/ 3	11	0	100	-9.6	-2.9	16.6	1
60620	12	V	400	28/ 0	9	1	100	-13.8	-3.3	18.0	1
62306	00	V	200	31/ 27	20	0	55	-2.1	1.0	18.3	4
62306	12	V	200	31/ 27	11	0	45	-6.9	6.0	26.9	6
62337	00	V	200	31/ 34	26	0	100	-13.9	8.3	24.8	5
62337	12	V	150	31/ 34	22	0	100	-16.3	9.5	25.5	6
62378	00	V	300	30/ 31	28	0	100	-2.7	5.5	21.0	3
62403	12	V	150	26/ 33	23	1	100	3.6	6.2	16.9	1
62423	00	V	150	27/ 28	21	0	100	3.3	0.9	15.4	1
71823	00	V	250	54/ -74	27	0	3	-2.9	2.2	18.5	1
71823	12	V	250	54/ -74	27	0	7	-2.9	2.3	17.5	1
72376	00	V	300	37/-108	29	0	100	-1.5	-4.8	20.7	3
72376	12	V	250	37/-108	26	0	100	-1.3	-1.9	20.6	3
87155	12	V	150	-27/ -59	7	0	14	-8.5	-3.0	16.4	1

Figure 9. TEMP/PILOT 300 hPa wind mean daily count. NOVEMBER 2004
All hours
Global average number of observations in 24 hours = 1253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3 8 12 20 16 7 2 0 0 0 1 1 7 9 3 6 14 3 4 3 6 4 11 22 26 28 13 6
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2 1 1 3 2 1 6 1 1 3 4 3 1 0 2 1 9 4 2 7 2 1 2
1 0 2 1 3 1 19 13 0 4 4 2 3
0 2 0 0 0 0 5 5 9 4 0 2 0 1 0 1 2 1 1 1
2 2 1 3 6 5 1 0 1 1 3 2 1 2 6 8 9 1
1 1 2 1 1 1 11 11 1 0 1 2 1 2 1 10 3 5 9 7 5
1 3 2 1 2 1 6 8 8 21 12 7
1 1 2 2 0 2 1 4 3 5
1 2 0 0 0 2
0 0 0 0 0 2 2 1 1 1 1
1 1 1 2

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
WAAH	12	DD	45/ -57	7	-11.0	9.3	17.5
28722	12	DD	55/ 56	15	-22.2	5.2	23.7
33791	12	DD	48/ 33	23	-13.5	2.9	8.7
42182	00	DD	29/ 77	25	13.1	2.7	9.1
42410	12	DD	26/ 92	11	-10.6	8.8	15.9
42492	12	DD	26/ 85	12	-11.1	6.2	13.5
43333	00	DD	12/ 93	13	10.7	8.4	24.9
58968	00	DD	25/ 122	28	18.1	8.9	10.8
58968	12	DD	25/ 122	25	18.3	8.1	8.3
62337	12	DD	31/ 34	22	-21.0	1.2	6.4
78954	12	DD	13/ -59	16	-14.2	9.8	22.2

MONITORING OF SATELLITE WINDS

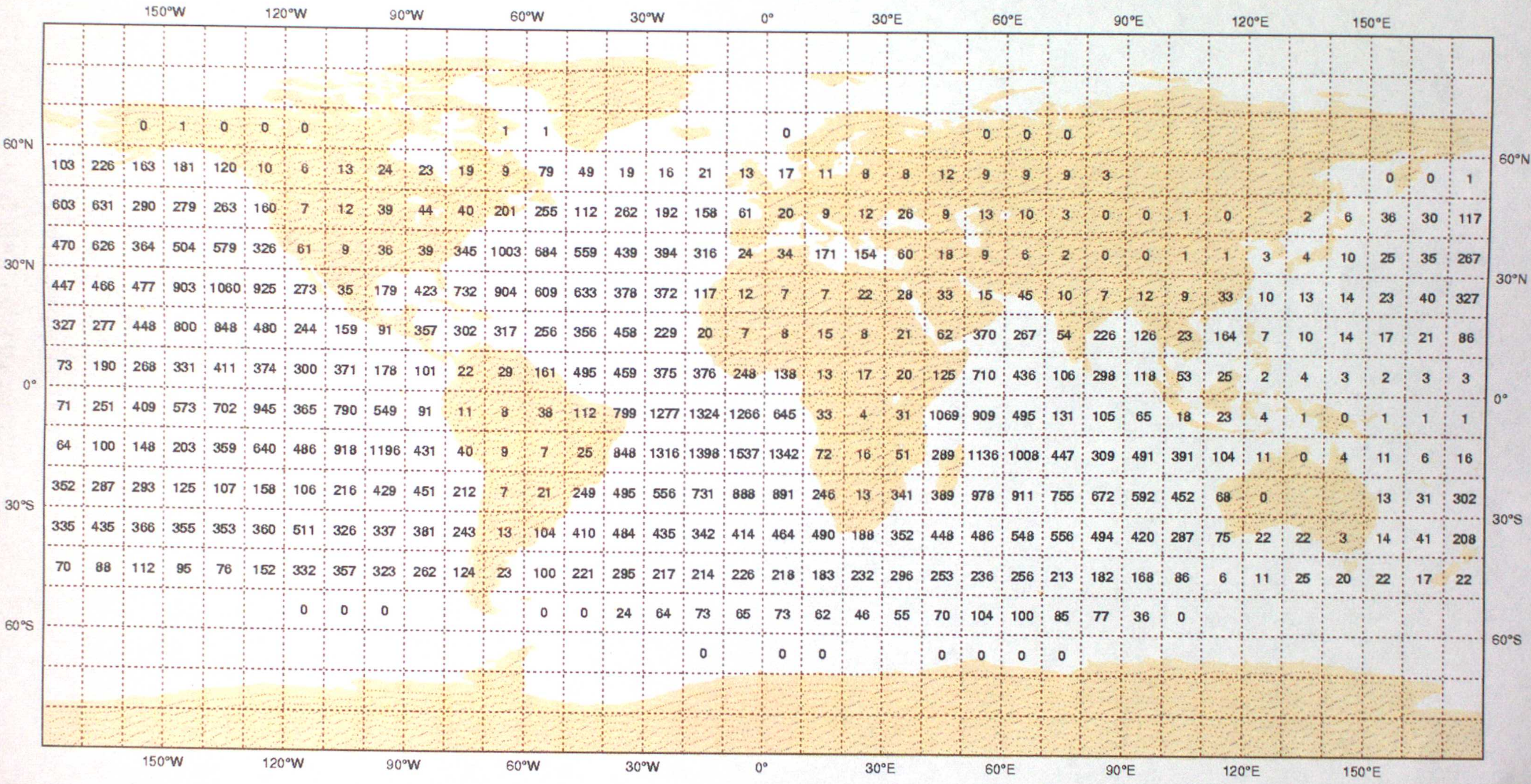
MONITORING CENTRE: EXETER

MONTH: Nov 2004

Monitoring procedures

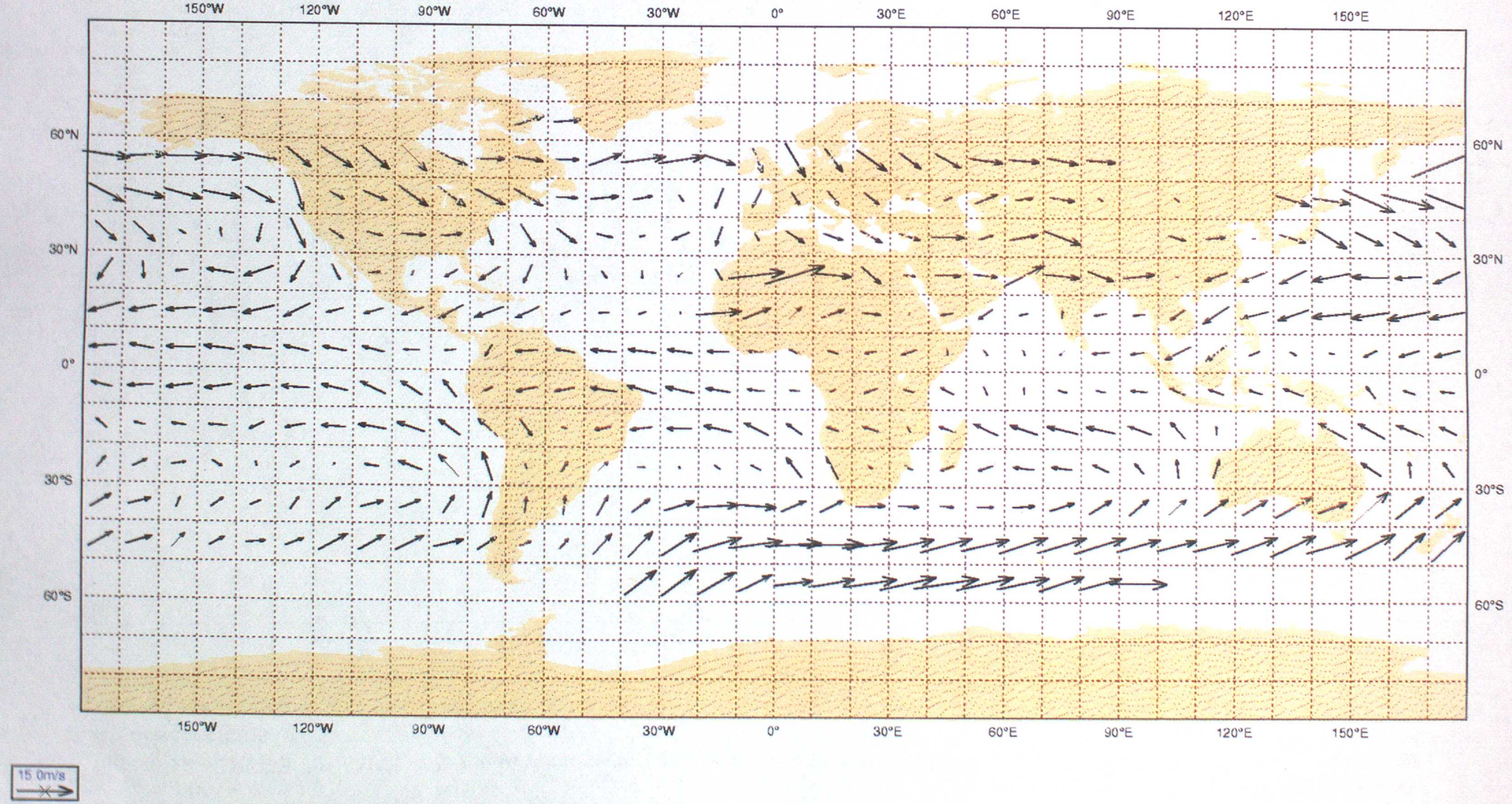
Period	:One calendar month.
Data monitored	:Reports from GOES-9, GOES-10, GOES-12, METEOSAT-5, METEOSAT-7
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa :Mean wind :Mean observation minus background vector wind differences :Mean observation minus background speed differences :RMS of observation minus background vector differences

Figure 10. SATOB 701 - 1000 hPa mean daily count. NOVEMBER 2004
Global average number of observations in 24 hours = 95450



		0	1	0	0	0					1	1						0					0	0	0										
103	226	163	181	120	10	6	13	24	23	19	9	79	49	19	16	21	13	17	11	8	8	12	9	9	9	3							0	0	1
603	631	290	279	263	160	7	12	39	44	40	201	255	112	262	192	158	61	20	9	12	26	9	13	10	3	0	0	1	0		2	6	36	30	117
470	626	364	504	579	326	61	9	36	39	345	1003	684	559	439	394	316	24	34	171	154	60	18	9	6	2	0	0	1	1	3	4	10	25	35	267
447	466	477	903	1060	925	273	35	179	423	732	904	609	633	378	372	117	12	7	7	22	28	33	15	45	10	7	12	9	33	10	13	14	23	40	327
327	277	448	800	848	480	244	159	91	357	302	317	256	356	458	229	20	7	8	15	8	21	62	370	267	54	226	126	23	164	7	10	14	17	21	86
73	190	268	331	411	374	300	371	178	101	22	29	161	495	459	375	376	248	138	13	17	20	125	710	436	106	298	118	53	25	2	4	3	2	3	3
71	251	409	573	702	945	365	790	549	91	11	8	38	112	799	1277	1324	1266	645	33	4	31	1069	909	495	131	105	65	18	23	4	1	0	1	1	1
64	100	148	203	359	640	486	918	1196	431	40	9	7	25	848	1316	1398	1537	1342	72	16	51	289	1136	1008	447	309	491	391	104	11	0	4	11	6	16
352	287	293	125	107	158	106	216	429	451	212	7	21	249	495	556	731	888	891	246	13	341	389	978	911	755	672	592	452	68	0			13	31	302
335	435	366	355	353	360	511	326	337	381	243	13	104	410	484	435	342	414	464	490	188	352	448	486	548	556	494	420	287	75	22	22	3	14	41	208
70	88	112	95	76	152	332	357	323	262	124	23	100	221	295	217	214	226	218	183	232	296	253	236	256	213	182	168	86	6	11	25	20	22	17	22
						0	0	0				0	0	24	64	73	65	73	62	46	55	70	104	100	85	77	36	0							
																0		0	0			0	0	0	0										

Figure 11. SATOB 701 - 1000 hPa vector mean wind. NOVEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present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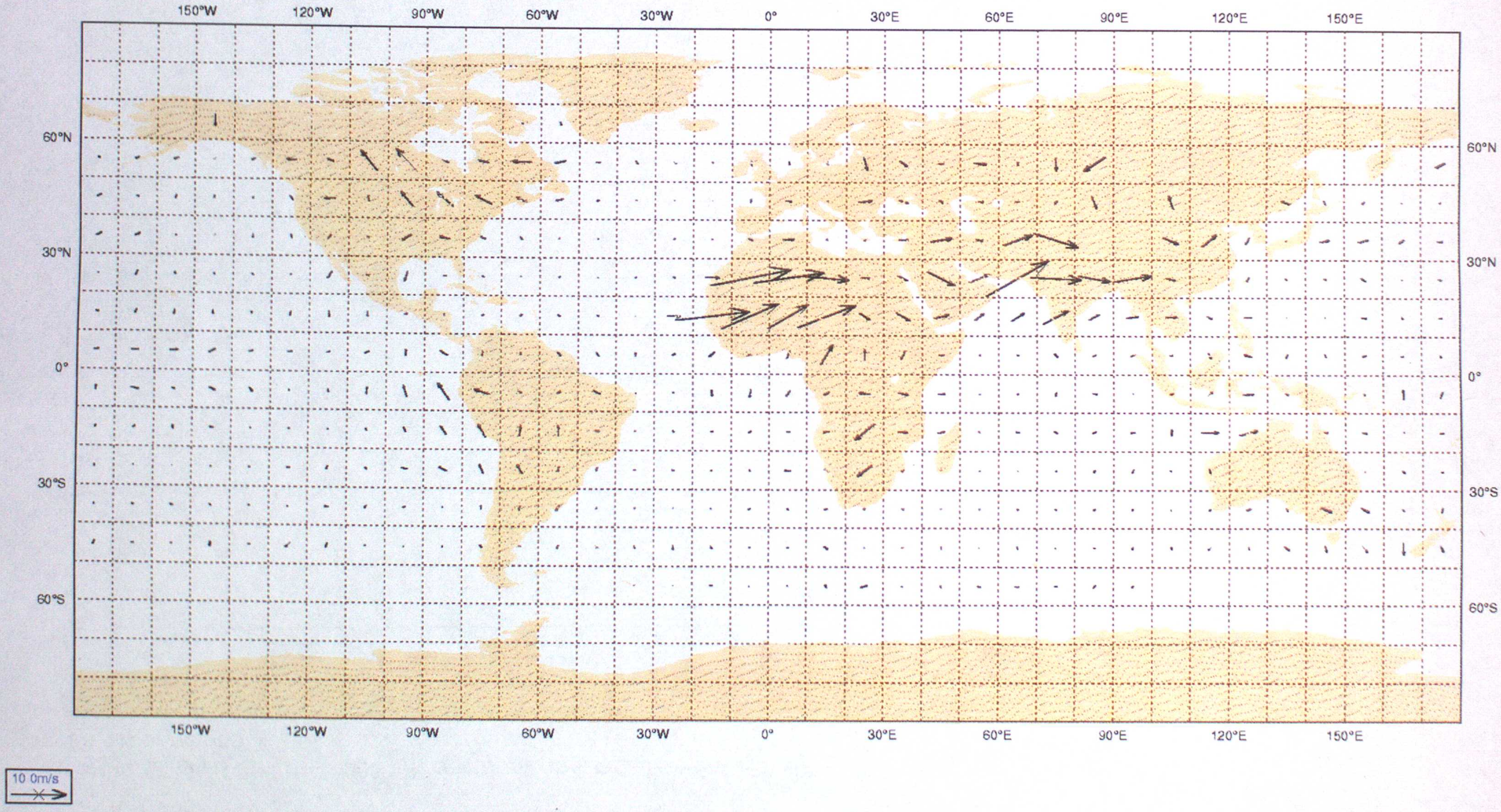
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 12. SATOB 701 - 1000 hPa mean vector wind differences. NOVEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present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30°E
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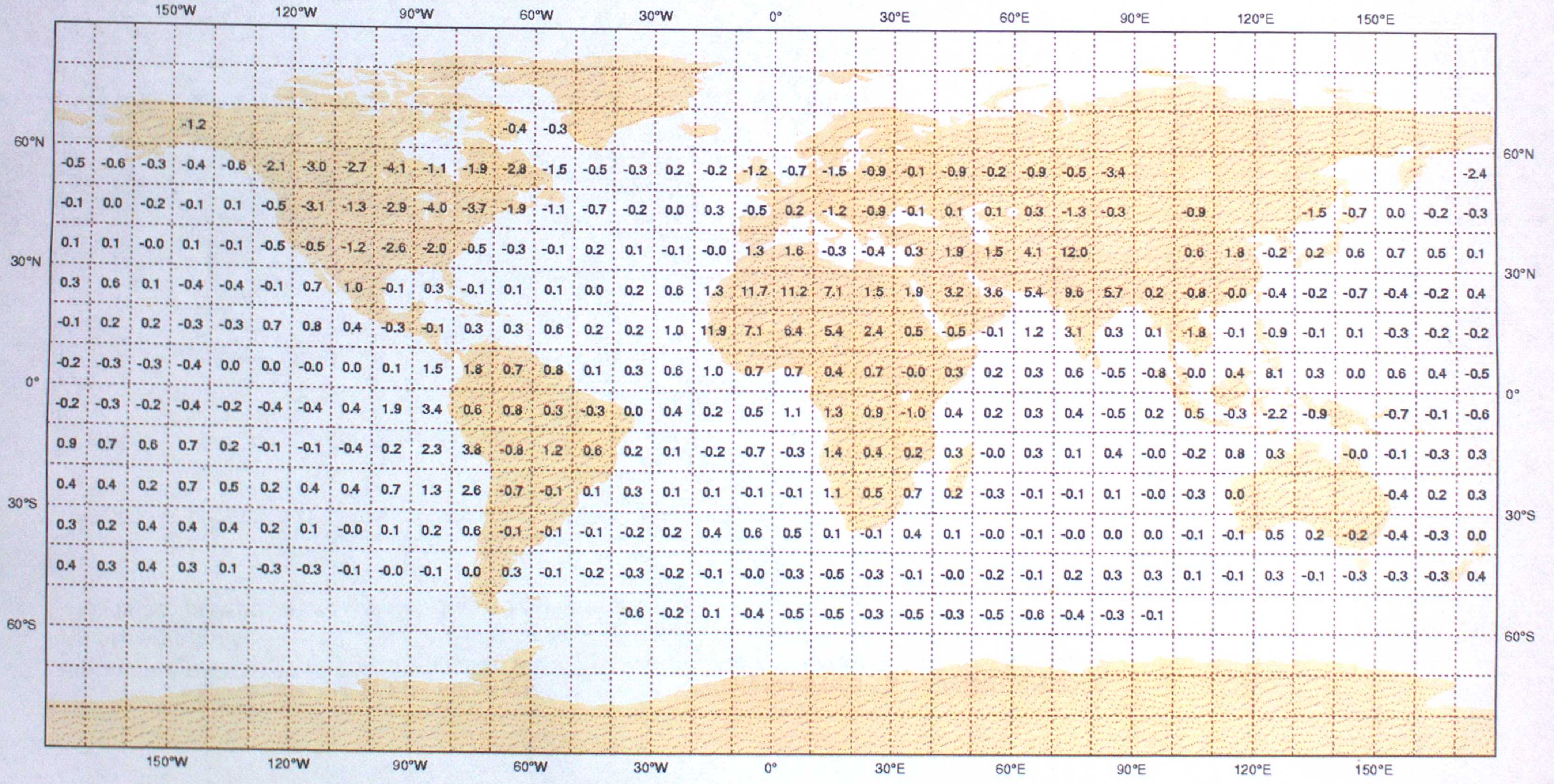
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). NOVEMBER 2004
All observations
Values are plotted where greater than 10 obs are present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60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-1.2 -0.4 -0.3
-0.5 -0.6 -0.3 -0.4 -0.6 -2.1 -3.0 -2.7 -4.1 -1.1 -1.9 -2.8 -1.5 -0.5 -0.3 0.2 -0.2 -1.2 -0.7 -1.5 -0.9 -0.1 -0.9 -0.2 -0.9 -0.5 -3.4 -2.4
-0.1 0.0 -0.2 -0.1 0.1 -0.5 -3.1 -1.3 -2.9 -4.0 -3.7 -1.9 -1.1 -0.7 -0.2 0.0 0.3 -0.5 0.2 -1.2 -0.9 -0.1 0.1 0.1 0.3 -1.3 -0.3 -0.9 -1.5 -0.7 0.0 -0.2 -0.3
0.1 0.1 -0.0 0.1 -0.1 -0.5 -0.5 -1.2 -2.6 -2.0 -0.5 -0.3 -0.1 0.2 0.1 -0.1 -0.0 1.3 1.6 -0.3 -0.4 0.3 1.9 1.5 4.1 12.0 0.6 1.8 -0.2 0.2 0.6 0.7 0.5 0.1
0.3 0.6 0.1 -0.4 -0.4 -0.1 0.7 1.0 -0.1 0.3 -0.1 0.1 0.1 0.0 0.2 0.6 1.3 11.7 11.2 7.1 1.5 1.9 3.2 3.6 5.4 9.6 5.7 0.2 -0.8 -0.0 -0.4 -0.2 -0.7 -0.4 -0.2 0.4
-0.1 0.2 0.2 -0.3 -0.3 0.7 0.8 0.4 -0.3 -0.1 0.3 0.3 0.6 0.2 0.2 1.0 11.9 7.1 6.4 5.4 2.4 0.5 -0.5 -0.1 1.2 3.1 0.3 0.1 -1.8 -0.1 -0.9 -0.1 0.1 -0.3 -0.2 -0.2
-0.2 -0.3 -0.3 -0.4 0.0 0.0 -0.0 0.0 0.1 1.5 1.8 0.7 0.8 0.1 0.3 0.6 1.0 0.7 0.7 0.4 0.7 -0.0 0.3 0.2 0.3 0.6 -0.5 -0.8 -0.0 0.4 8.1 0.3 0.0 0.6 0.4 -0.5
-0.2 -0.3 -0.2 -0.4 -0.2 -0.4 -0.4 0.4 1.9 3.4 0.6 0.8 0.3 -0.3 0.0 0.4 0.2 0.5 1.1 1.3 0.9 -1.0 0.4 0.2 0.3 0.4 -0.5 0.2 0.5 -0.3 -2.2 -0.9 -0.7 -0.1 -0.6
0.9 0.7 0.6 0.7 0.2 -0.1 -0.1 -0.4 0.2 2.3 3.8 -0.8 1.2 0.6 0.2 0.1 -0.2 -0.7 -0.3 1.4 0.4 0.2 0.3 -0.0 0.3 0.1 0.4 -0.0 -0.2 0.8 0.3 -0.0 -0.1 -0.3 0.3
0.4 0.4 0.2 0.7 0.5 0.2 0.4 0.4 0.7 1.3 2.6 -0.7 -0.1 0.1 0.3 0.1 0.1 -0.1 -0.1 1.1 0.5 0.7 0.2 -0.3 -0.1 -0.1 0.1 -0.0 -0.3 0.0 -0.4 0.2 0.3
0.3 0.2 0.4 0.4 0.4 0.2 0.1 -0.0 0.1 0.2 0.6 -0.1 -0.1 -0.1 -0.2 0.2 0.4 0.6 0.5 0.1 -0.1 0.4 0.1 -0.0 -0.1 -0.0 0.0 0.0 -0.1 -0.1 0.5 0.2 -0.2 -0.4 -0.3 0.0
0.4 0.3 0.4 0.3 0.1 -0.3 -0.3 -0.1 -0.0 -0.1 0.0 0.3 -0.1 -0.2 -0.3 -0.2 -0.1 -0.0 -0.3 -0.5 -0.3 -0.1 -0.0 -0.2 -0.1 0.2 0.3 0.3 0.1 -0.1 0.3 -0.1 -0.3 -0.3 -0.3 0.4
-0.6 -0.2 0.1 -0.4 -0.5 -0.5 -0.3 -0.5 -0.3 -0.5 -0.6 -0.4 -0.3 -0.1

Figure 14. SATOB 701 - 1000 hPa mean RMS O-B vector differences (ms-1). NOVEMBER 2004
All observations
Values are plotted where greater than 10 obs are present

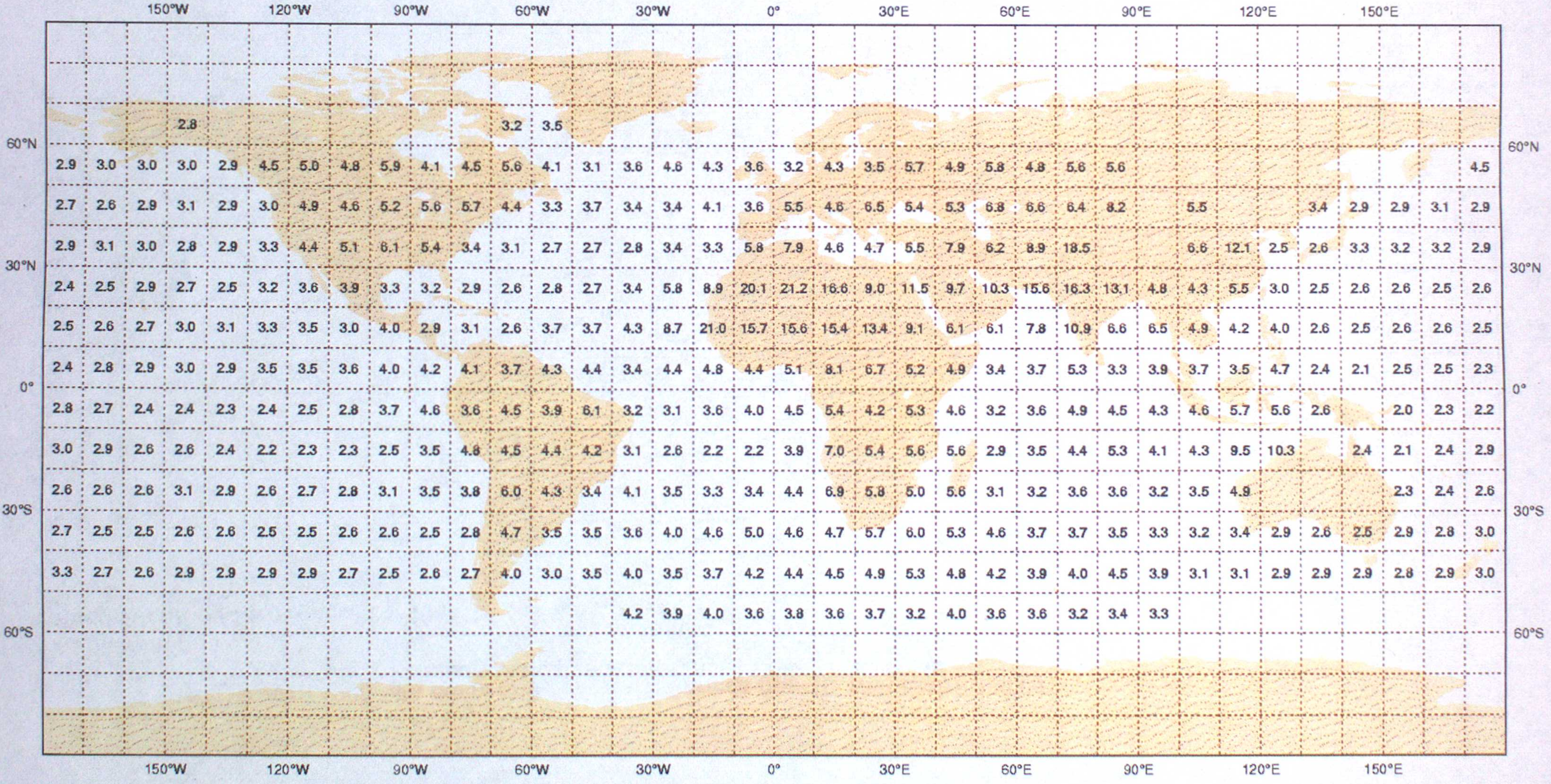
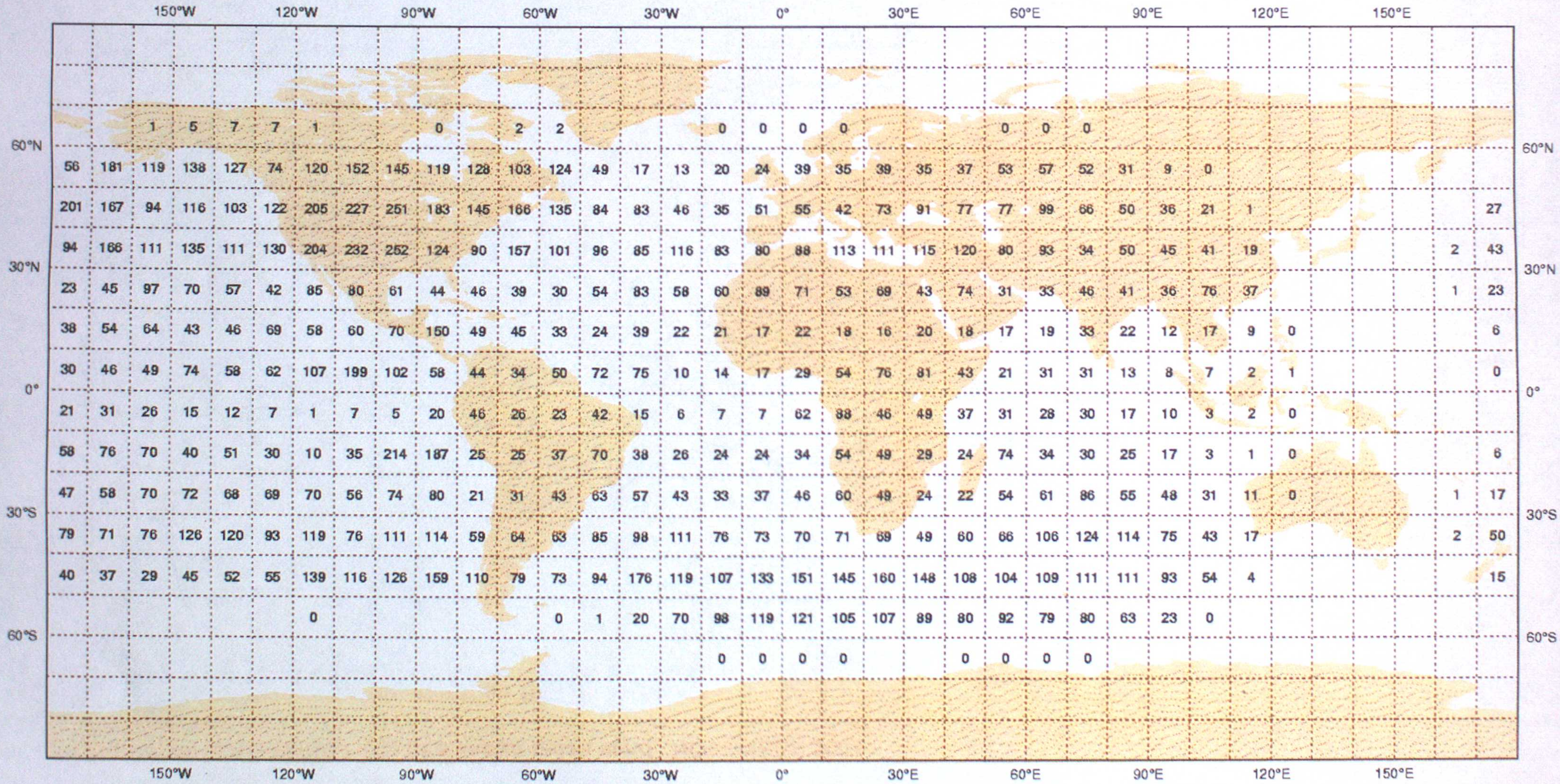

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2.8 3.2 3.5
2.9 3.0 3.0 3.0 2.9 4.5 5.0 4.8 5.9 4.1 4.5 5.6 4.1 3.1 3.6 4.6 4.3 3.6 3.2 4.3 3.5 5.7 4.9 5.8 4.8 5.6 5.6 4.5
2.7 2.6 2.9 3.1 2.9 3.0 4.9 4.6 5.2 5.6 5.7 4.4 3.3 3.7 3.4 3.4 4.1 3.6 5.5 4.6 6.5 5.4 5.3 6.8 6.6 6.4 8.2 5.5 3.4 2.9 2.9 3.1 2.9
2.9 3.1 3.0 2.8 2.9 3.3 4.4 5.1 6.1 5.4 3.4 3.1 2.7 2.7 2.8 3.4 3.3 5.8 7.9 4.6 4.7 5.5 7.9 6.2 8.9 18.5 6.6 12.1 2.5 2.6 3.3 3.2 3.2 2.9
2.4 2.5 2.9 2.7 2.5 3.2 3.6 3.9 3.3 3.2 2.9 2.6 2.8 2.7 3.4 5.8 8.9 20.1 21.2 16.6 9.0 11.5 9.7 10.3 15.6 16.3 13.1 4.8 4.3 5.5 3.0 2.5 2.6 2.6 2.5 2.6
2.5 2.6 2.7 3.0 3.1 3.3 3.5 3.0 4.0 2.9 3.1 2.6 3.7 3.7 4.3 8.7 21.0 15.7 15.6 15.4 13.4 9.1 6.1 6.1 7.8 10.9 6.6 6.5 4.9 4.2 4.0 2.6 2.5 2.6 2.6 2.5
2.4 2.8 2.9 3.0 2.9 3.5 3.5 3.6 4.0 4.2 4.1 3.7 4.3 4.4 3.4 4.4 4.8 4.4 5.1 8.1 6.7 5.2 4.9 3.4 3.7 5.3 3.3 3.9 3.7 3.5 4.7 2.4 2.1 2.5 2.5 2.3
2.8 2.7 2.4 2.4 2.3 2.4 2.5 2.8 3.7 4.6 3.6 4.5 3.9 6.1 3.2 3.1 3.6 4.0 4.5 5.4 4.2 5.3 4.6 3.2 3.6 4.9 4.5 4.3 4.6 5.7 5.6 2.6 2.0 2.3 2.2
3.0 2.9 2.6 2.6 2.4 2.2 2.3 2.3 2.5 3.5 4.8 4.5 4.4 4.2 3.1 2.6 2.2 2.2 3.9 7.0 5.4 5.6 5.6 2.9 3.5 4.4 5.3 4.1 4.3 9.5 10.3 2.4 2.1 2.4 2.9
2.6 2.6 2.6 3.1 2.9 2.6 2.7 2.8 3.1 3.5 3.8 6.0 4.3 3.4 4.1 3.5 3.3 3.4 4.4 6.9 5.8 5.0 5.6 3.1 3.2 3.6 3.6 3.2 3.5 4.9 2.3 2.4 2.6
2.7 2.5 2.5 2.6 2.6 2.5 2.5 2.6 2.6 2.5 2.8 4.7 3.5 3.5 3.6 4.0 4.6 5.0 4.6 4.7 5.7 6.0 5.3 4.6 3.7 3.7 3.5 3.3 3.2 3.4 2.9 2.6 2.5 2.9 2.8 3.0
3.3 2.7 2.6 2.9 2.9 2.9 2.9 2.7 2.5 2.6 2.7 4.0 3.0 3.5 4.0 3.5 3.7 4.2 4.4 4.5 4.9 5.3 4.8 4.2 3.9 4.0 4.5 3.9 3.1 3.1 2.9 2.9 2.9 2.8 2.9 3.0
4.2 3.9 4.0 3.6 3.8 3.6 3.7 3.2 4.0 3.6 3.6 3.2 3.4 3.3

Figure 15. SATOB 401 - 700 hPa mean daily count. NOVEMBER 2004
Global average number of observations in 24 hours = 23273



		1	5	7	7	1			0		2	2				0	0
56	181	119	138	127	74	120	152	145	119	128	103	124	49	17	13	20	24
201	167	94	116	103	122	205	227	251	183	145	166	135	84	83	46	35	51
94	166	111	135	111	130	204	232	252	124	90	157	101	96	85	116	83	80
23	45	97	70	57	42	85	80	61	44	46	39	30	54	83	58	60	89
38	54	64	43	46	69	58	60	70	150	49	45	33	24	39	22	21	17
30	46	49	74	58	62	107	199	102	58	44	34	50	72	75	10	14	17
21	31	26	15	12	7	1	7	5	20	46	26	23	42	15	6	7	7
58	76	70	40	51	30	10	35	214	187	25	25	37	70	38	26	24	24
47	58	70	72	68	69	70	56	74	80	21	31	43	63	57	43	33	37
79	71	76	126	120	93	119	76	111	114	59	64	63	85	98	111	76	73
40	37	29	45	52	55	139	116	126	159	110	79	73	94	176	119	107	133
						0						0	1	20	70	98	119
																0	0

0	0				0	0	0										
39	35	39	35	37	53	57	52	31	9	0							
55	42	73	91	77	77	99	66	50	36	21	1						27
88	113	111	115	120	80	93	34	50	45	41	19					2	43
71	53	69	43	74	31	33	46	41	36	76	37					1	23
22	18	16	20	18	17	19	33	22	12	17	9	0					6
29	54	76	81	43	21	31	31	13	8	7	2	1					0
62	88	46	49	37	31	28	30	17	10	3	2	0					
34	54	49	29	24	74	34	30	25	17	3	1	0					6
46	60	49	24	22	54	61	86	55	48	31	11	0				1	17
70	71	69	49	60	66	106	124	114	75	43	17					2	50
151	145	160	148	108	104	109	111	111	93	54	4						15
121	105	107	89	80	92	79	80	63	23	0							
0	0			0	0	0	0										

Figure 16. SATOB 401 - 700 hPa vector mean wind. NOVEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present

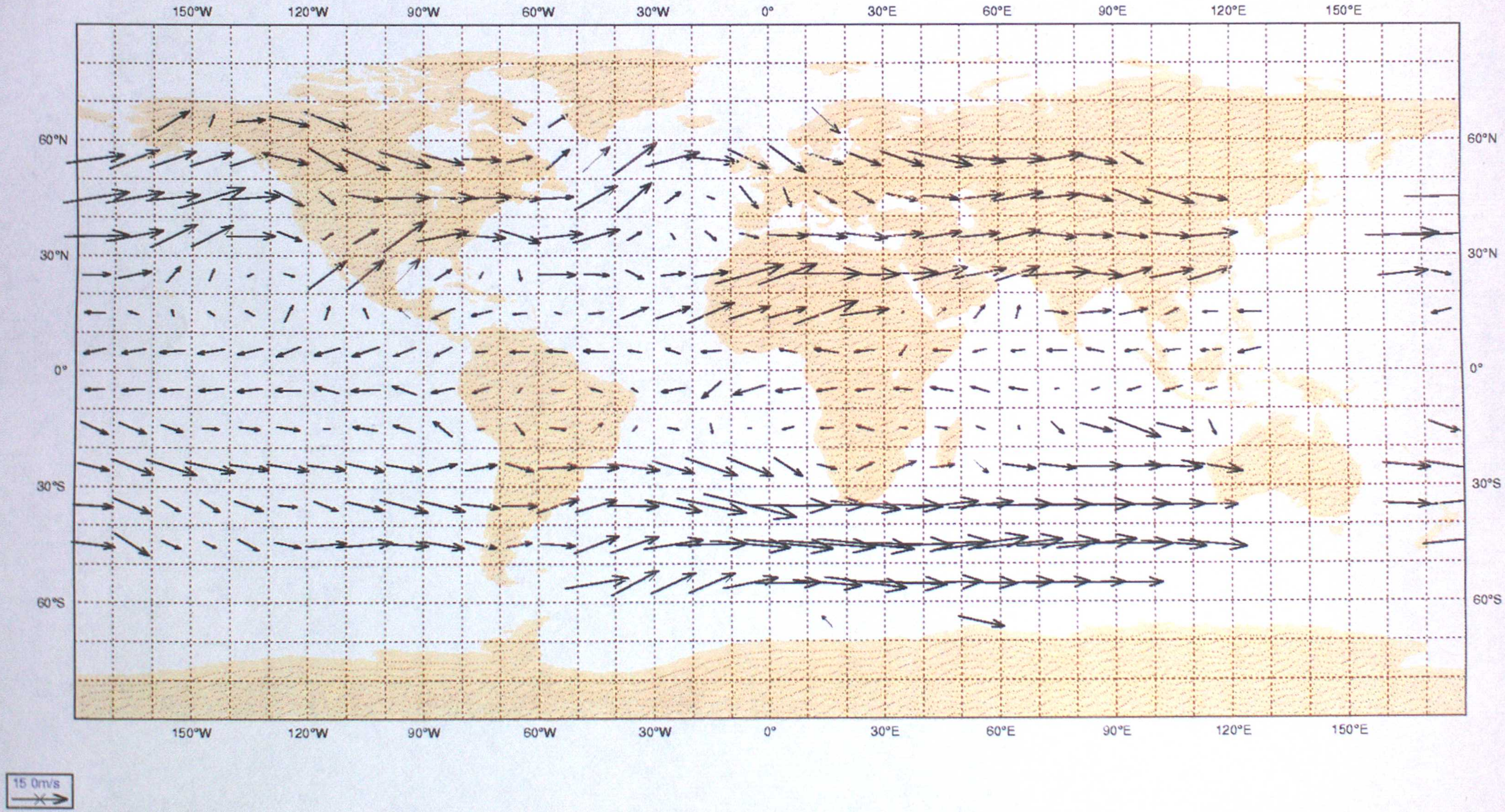

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 17. SATOB 401 - 700 hPa mean vector wind differences. NOVEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present

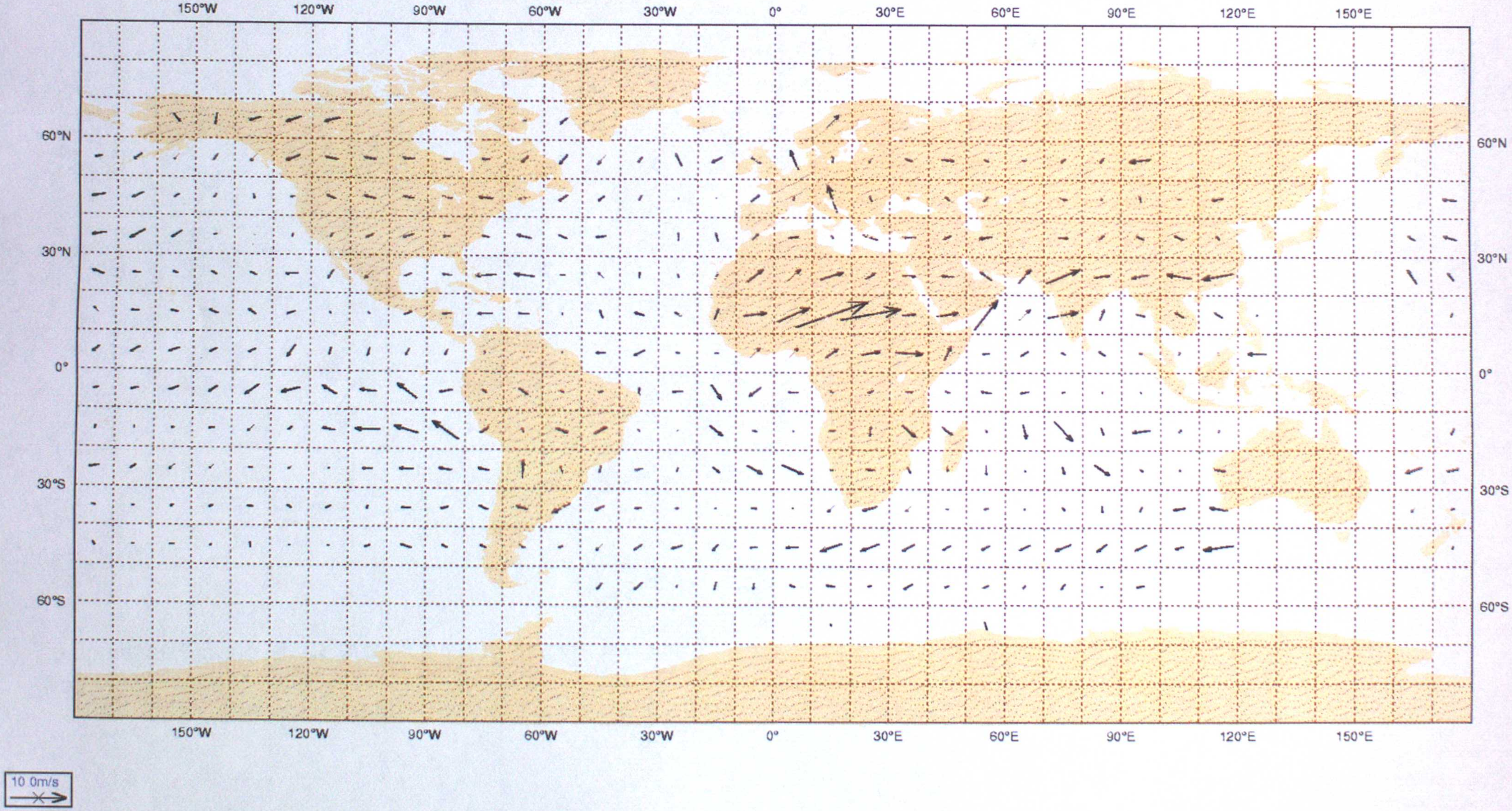

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10 0m/s

Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). NOVEMBER 2004
All observations
Values are plotted where greater than 10 obs are present

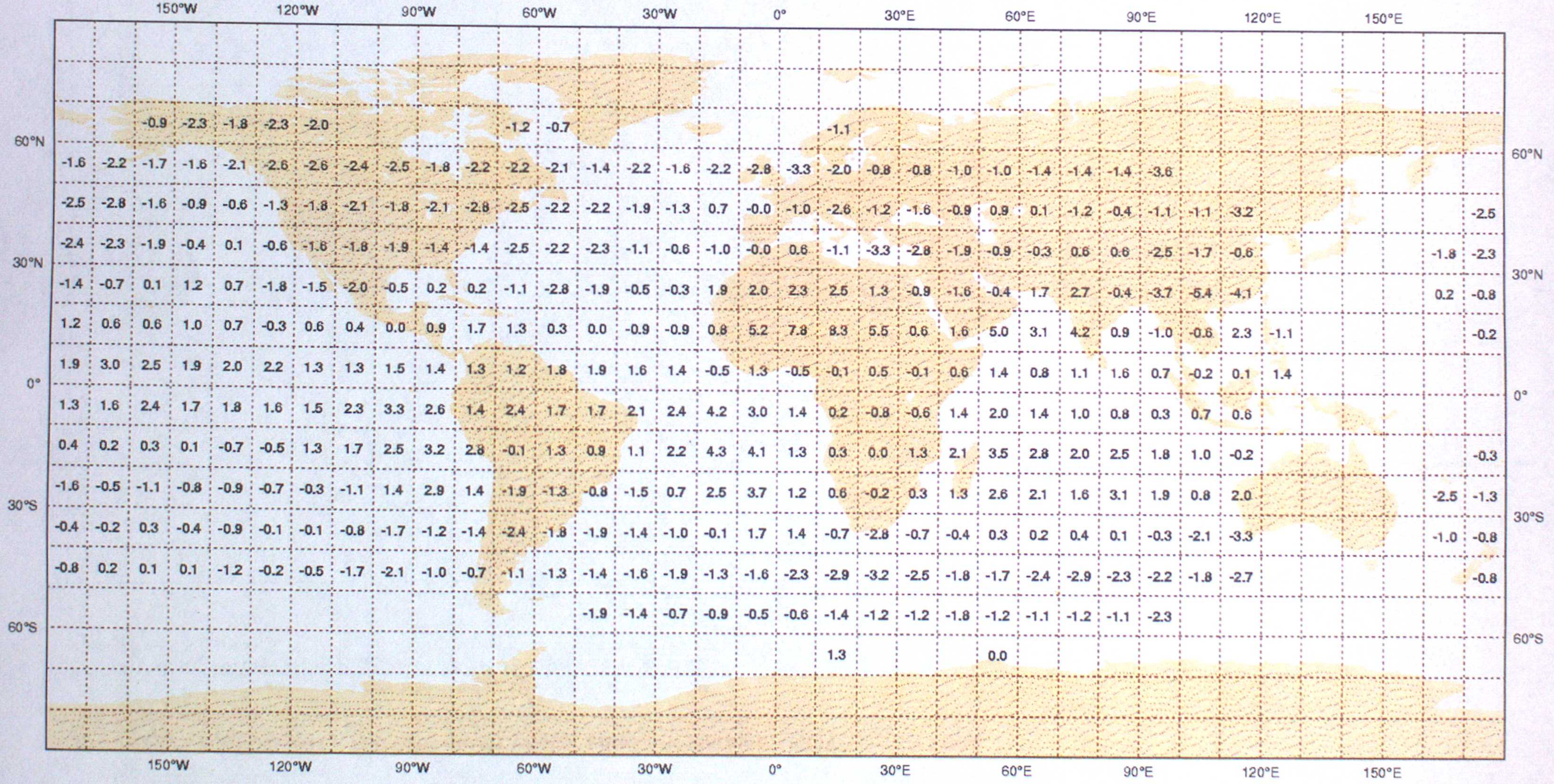
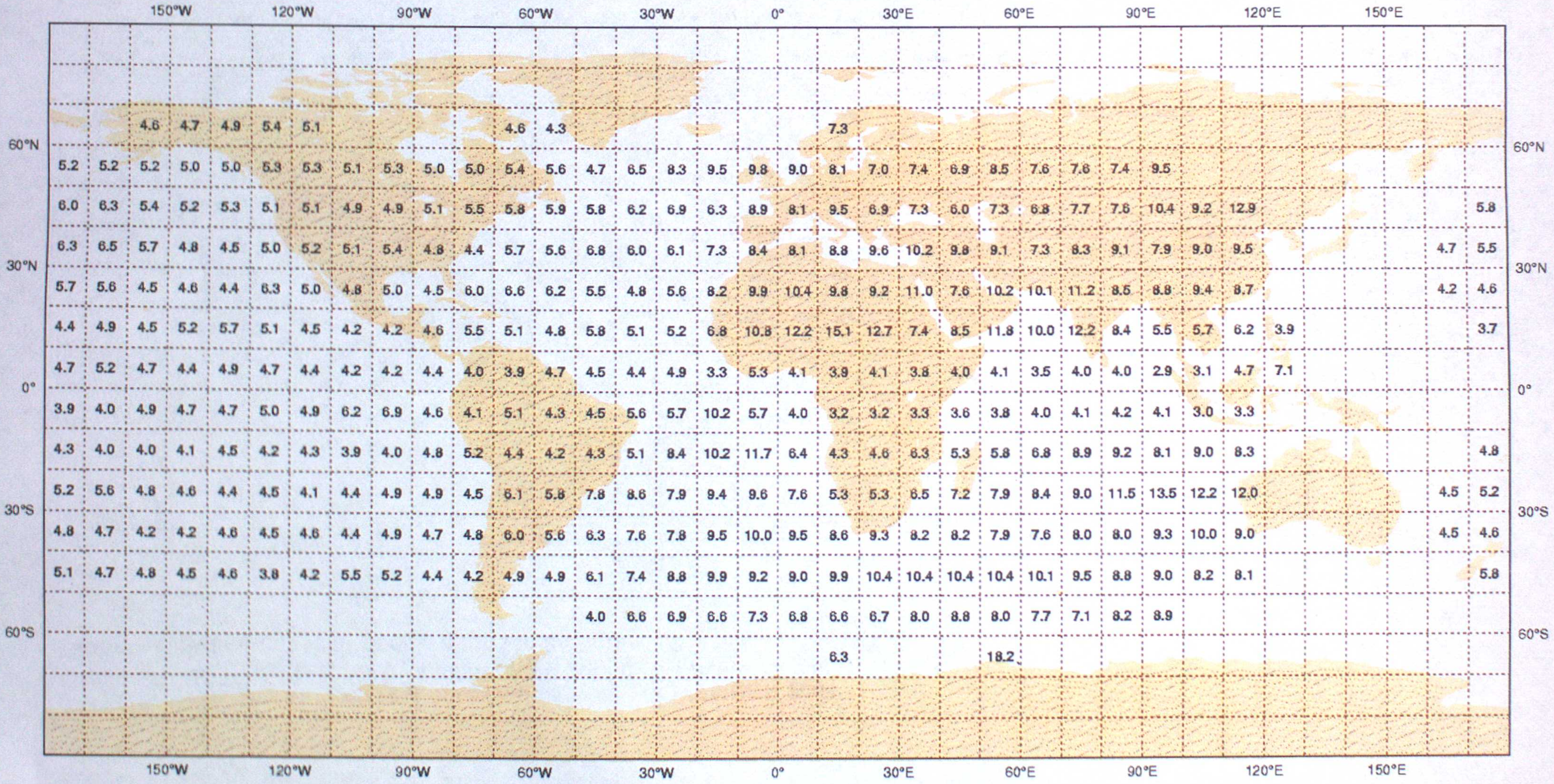
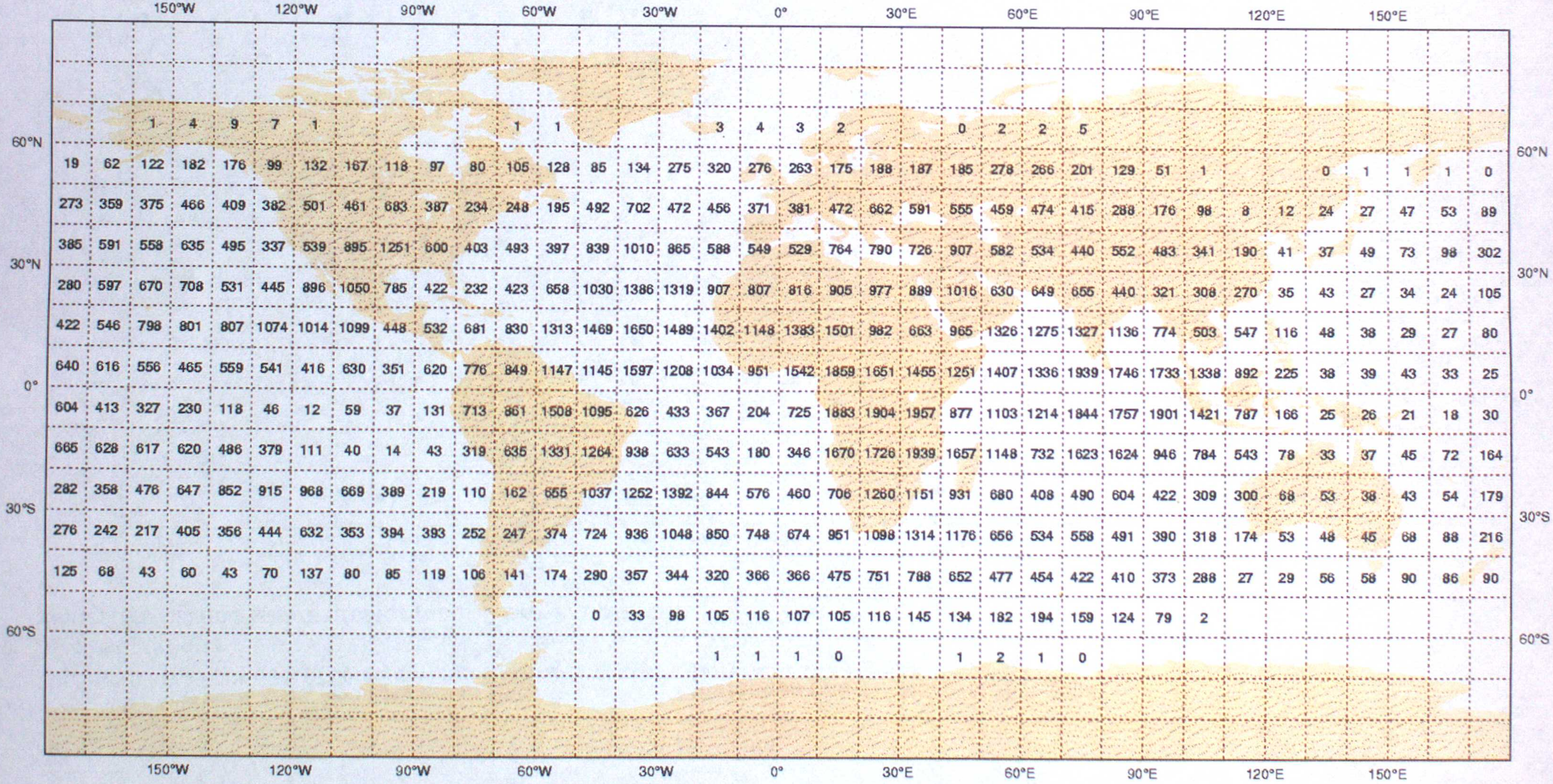

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-0.9 -2.3 -1.8 -2.3 -2.0 -1.2 -0.7 -1.1
-1.6 -2.2 -1.7 -1.6 -2.1 -2.6 -2.6 -2.4 -2.5 -1.8 -2.2 -2.2 -2.1 -1.4 -2.2 -1.6 -2.2 -2.8 -3.3 -2.0 -0.8 -0.8 -1.0 -1.0 -1.4 -1.4 -1.4 -3.6
-2.5 -2.8 -1.6 -0.9 -0.6 -1.3 -1.8 -2.1 -1.8 -2.1 -2.8 -2.5 -2.2 -2.2 -1.9 -1.3 0.7 -0.0 -1.0 -2.6 -1.2 -1.6 -0.9 0.9 0.1 -1.2 -0.4 -1.1 -1.1 -3.2 -2.5
-2.4 -2.3 -1.9 -0.4 0.1 -0.6 -1.6 -1.8 -1.9 -1.4 -1.4 -2.5 -2.2 -2.3 -1.1 -0.6 -1.0 -0.0 0.6 -1.1 -3.3 -2.8 -1.9 -0.9 -0.3 0.6 0.6 -2.5 -1.7 -0.6 -1.8 -2.3
-1.4 -0.7 0.1 1.2 0.7 -1.8 -1.5 -2.0 -0.5 0.2 0.2 -1.1 -2.8 -1.9 -0.5 -0.3 1.9 2.0 2.3 2.5 1.3 -0.9 -1.6 -0.4 1.7 2.7 -0.4 -3.7 -5.4 -4.1 0.2 -0.8
1.2 0.6 0.6 1.0 0.7 -0.3 0.6 0.4 0.0 0.9 1.7 1.3 0.3 0.0 -0.9 -0.9 0.8 5.2 7.8 8.3 5.5 0.6 1.6 5.0 3.1 4.2 0.9 -1.0 -0.6 2.3 -1.1 -0.2
1.9 3.0 2.5 1.9 2.0 2.2 1.3 1.3 1.5 1.4 1.3 1.2 1.8 1.9 1.6 1.4 -0.5 1.3 -0.5 -0.1 0.5 -0.1 0.6 1.4 0.8 1.1 1.6 0.7 -0.2 0.1 1.4
1.3 1.6 2.4 1.7 1.8 1.6 1.5 2.3 3.3 2.6 1.4 2.4 1.7 1.7 2.1 2.4 4.2 3.0 1.4 0.2 -0.8 -0.6 1.4 2.0 1.4 1.0 0.8 0.3 0.7 0.6
0.4 0.2 0.3 0.1 -0.7 -0.5 1.3 1.7 2.5 3.2 2.8 -0.1 1.3 0.9 1.1 2.2 4.3 4.1 1.3 0.3 0.0 1.3 2.1 3.5 2.8 2.0 2.5 1.8 1.0 -0.2 -0.3
-1.6 -0.5 -1.1 -0.8 -0.9 -0.7 -0.3 -1.1 1.4 2.9 1.4 -1.9 -1.3 -0.8 -1.5 0.7 2.5 3.7 1.2 0.6 -0.2 0.3 1.3 2.6 2.1 1.6 3.1 1.9 0.8 2.0 -2.5 -1.3
-0.4 -0.2 0.3 -0.4 -0.9 -0.1 -0.1 -0.8 -1.7 -1.2 -1.4 -2.4 -1.8 -1.9 -1.4 -1.0 -0.1 1.7 1.4 -0.7 -2.8 -0.7 -0.4 0.3 0.2 0.4 0.1 -0.3 -2.1 -3.3 -1.0 -0.8
-0.8 0.2 0.1 0.1 -1.2 -0.2 -0.5 -1.7 -2.1 -1.0 -0.7 -1.1 -1.3 -1.4 -1.6 -1.9 -1.3 -1.6 -2.3 -2.9 -3.2 -2.5 -1.8 -1.7 -2.4 -2.9 -2.3 -2.2 -1.8 -2.7 -0.8
-1.9 -1.4 -0.7 -0.9 -0.5 -0.6 -1.4 -1.2 -1.2 -1.8 -1.2 -1.1 -1.2 -1.1 -2.3
1.3 0.0

Figure 19. SATOB 401 - 700 hPa mean RMS O-B vector differences (ms-1). NOVEMBER 2004
All observations
Values are plotted where greater than 10 obs are present



		4.6	4.7	4.9	5.4	5.1					4.6	4.3							7.3																
5.2	5.2	5.2	5.0	5.0	5.3	5.3	5.1	5.3	5.0	5.0	5.4	5.6	4.7	6.5	8.3	9.5	9.8	9.0	8.1	7.0	7.4	6.9	8.5	7.6	7.6	7.4	9.5								
6.0	6.3	5.4	5.2	5.3	5.1	5.1	4.9	4.9	5.1	5.5	5.8	5.9	5.8	6.2	6.9	6.3	8.9	8.1	9.5	6.9	7.3	6.0	7.3	6.8	7.7	7.6	10.4	9.2	12.9						5.8
6.3	6.5	5.7	4.8	4.5	5.0	5.2	5.1	5.4	4.8	4.4	5.7	5.6	6.8	6.0	6.1	7.3	8.4	8.1	8.8	9.6	10.2	9.8	9.1	7.3	8.3	9.1	7.9	9.0	9.5					4.7	5.5
5.7	5.6	4.5	4.6	4.4	6.3	5.0	4.8	5.0	4.5	6.0	6.6	6.2	5.5	4.8	5.6	8.2	9.9	10.4	9.8	9.2	11.0	7.6	10.2	10.1	11.2	8.5	8.8	9.4	8.7					4.2	4.6
4.4	4.9	4.5	5.2	5.7	5.1	4.5	4.2	4.2	4.6	5.5	5.1	4.8	5.8	5.1	5.2	6.8	10.8	12.2	15.1	12.7	7.4	8.5	11.8	10.0	12.2	8.4	5.5	5.7	6.2	3.9					3.7
4.7	5.2	4.7	4.4	4.9	4.7	4.4	4.2	4.2	4.4	4.0	3.9	4.7	4.5	4.4	4.9	3.3	5.3	4.1	3.9	4.1	3.8	4.0	4.1	3.5	4.0	4.0	2.9	3.1	4.7	7.1					
3.9	4.0	4.9	4.7	4.7	5.0	4.9	6.2	6.9	4.6	4.1	5.1	4.3	4.5	5.6	5.7	10.2	5.7	4.0	3.2	3.2	3.3	3.6	3.8	4.0	4.1	4.2	4.1	3.0	3.3						
4.3	4.0	4.0	4.1	4.5	4.2	4.3	3.9	4.0	4.8	5.2	4.4	4.2	4.3	5.1	8.4	10.2	11.7	6.4	4.3	4.6	6.3	5.3	5.8	6.8	8.9	9.2	8.1	9.0	8.3						4.8
5.2	5.6	4.8	4.6	4.4	4.5	4.1	4.4	4.9	4.9	4.5	6.1	5.8	7.8	8.6	7.9	9.4	9.6	7.6	5.3	5.3	6.5	7.2	7.9	8.4	9.0	11.5	13.5	12.2	12.0					4.5	5.2
4.8	4.7	4.2	4.2	4.6	4.5	4.6	4.4	4.9	4.7	4.8	6.0	5.6	6.3	7.6	7.8	9.5	10.0	9.5	8.6	9.3	8.2	8.2	7.9	7.6	8.0	8.0	9.3	10.0	9.0					4.5	4.6
5.1	4.7	4.8	4.5	4.6	3.8	4.2	5.5	5.2	4.4	4.2	4.9	4.9	6.1	7.4	8.8	9.9	9.2	9.0	9.9	10.4	10.4	10.4	10.4	10.1	9.5	8.8	9.0	8.2	8.1						5.8
													4.0	6.6	6.9	6.6	7.3	6.8	6.6	6.7	8.0	8.8	8.0	7.7	7.1	8.2	8.9								
																			6.3				18.2												

Figure 20. SATOB 101 - 400 hPa mean daily count. NOVEMBER 2004
Global average number of observations in 24 hours = 218184



		1	4	9	7	1					1	1				3	4	3	2			0	2	2	5										
19	62	122	182	176	99	132	167	118	97	80	105	128	85	134	275	320	276	263	175	188	187	185	278	266	201	129	51	1			0	1	1	1	0
273	359	375	466	409	382	501	461	683	387	234	248	195	492	702	472	456	371	381	472	662	591	555	459	474	415	288	176	98	8	12	24	27	47	53	89
385	591	558	635	495	337	539	895	1251	600	403	493	397	839	1010	865	588	549	529	764	790	726	907	582	534	440	552	483	341	190	41	37	49	73	98	302
280	597	670	708	531	445	896	1050	785	422	232	423	658	1030	1386	1319	907	807	816	905	977	889	1016	630	649	655	440	321	308	270	35	43	27	34	24	105
422	546	798	801	807	1074	1014	1099	448	532	681	830	1313	1469	1650	1489	1402	1148	1383	1501	982	663	965	1326	1275	1327	1136	774	503	547	116	48	38	29	27	80
640	616	556	465	559	541	416	630	351	620	776	849	1147	1145	1597	1208	1034	951	1542	1859	1651	1455	1251	1407	1336	1939	1746	1733	1338	892	225	38	39	43	33	25
604	413	327	230	118	46	12	59	37	131	713	861	1508	1095	626	433	367	204	725	1883	1904	1957	877	1103	1214	1844	1757	1901	1421	787	166	25	26	21	18	30
665	628	617	620	486	379	111	40	14	43	319	635	1331	1264	938	633	543	180	346	1670	1726	1939	1657	1148	732	1623	1624	946	784	543	78	33	37	45	72	164
282	358	476	647	852	915	968	669	389	219	110	162	655	1037	1252	1392	844	576	460	706	1260	1151	931	680	408	490	604	422	309	300	68	53	38	43	54	179
276	242	217	405	356	444	632	353	394	393	252	247	374	724	936	1048	850	748	674	951	1098	1314	1176	656	534	558	491	390	318	174	53	48	45	68	88	216
125	68	43	60	43	70	137	80	85	119	106	141	174	290	357	344	320	366	366	475	751	788	652	477	454	422	410	373	288	27	29	56	58	90	86	90
													0	33	98	105	116	107	105	116	145	134	182	194	159	124	79	2							
																1	1	1	0			1	2	1	0										

Figure 21. SATOB 101 - 400 hPa vector mean wind. NOVEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present

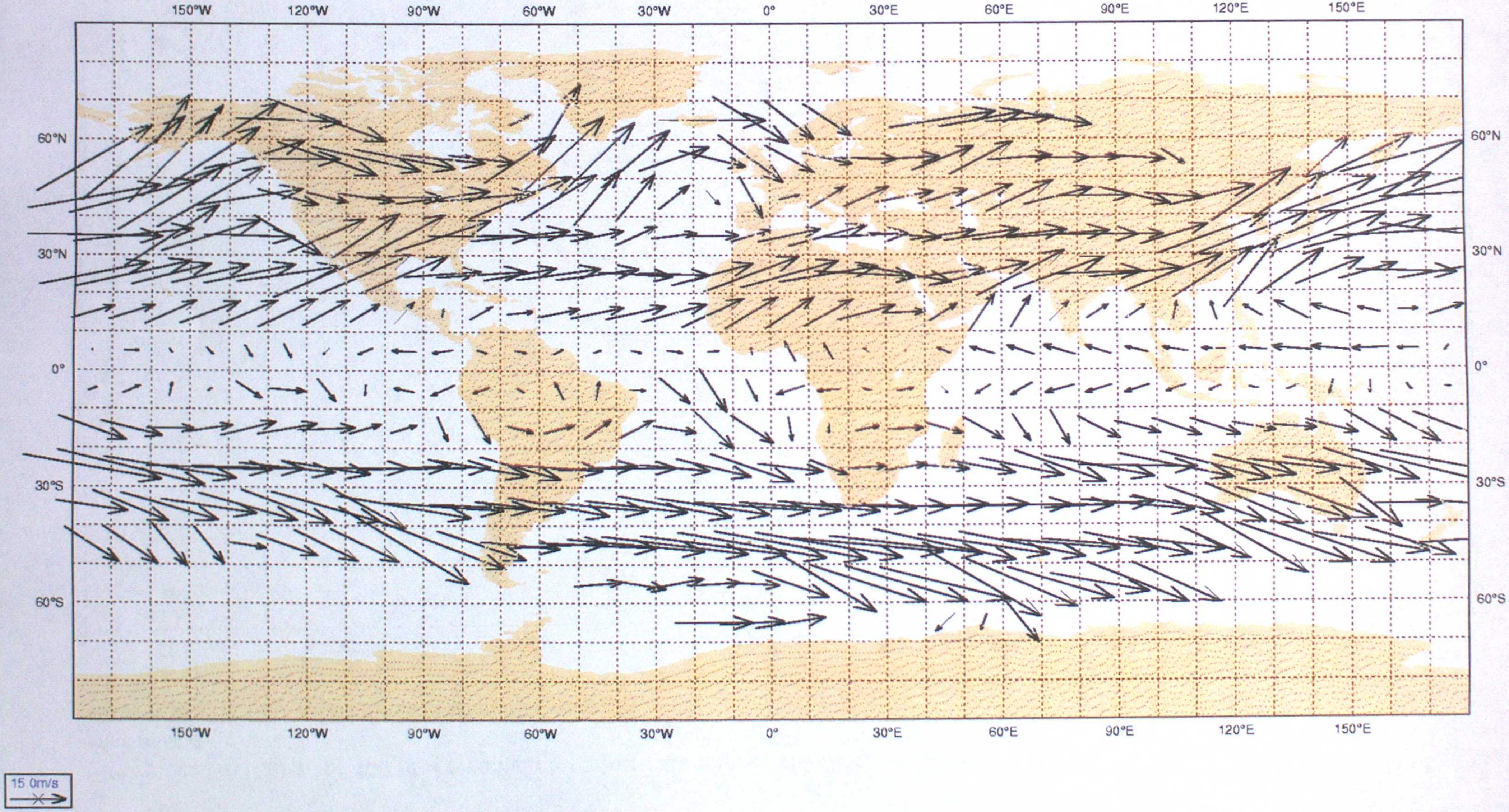

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 22. SATOB 101 - 400 hPa mean vector wind differences. NOVEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present

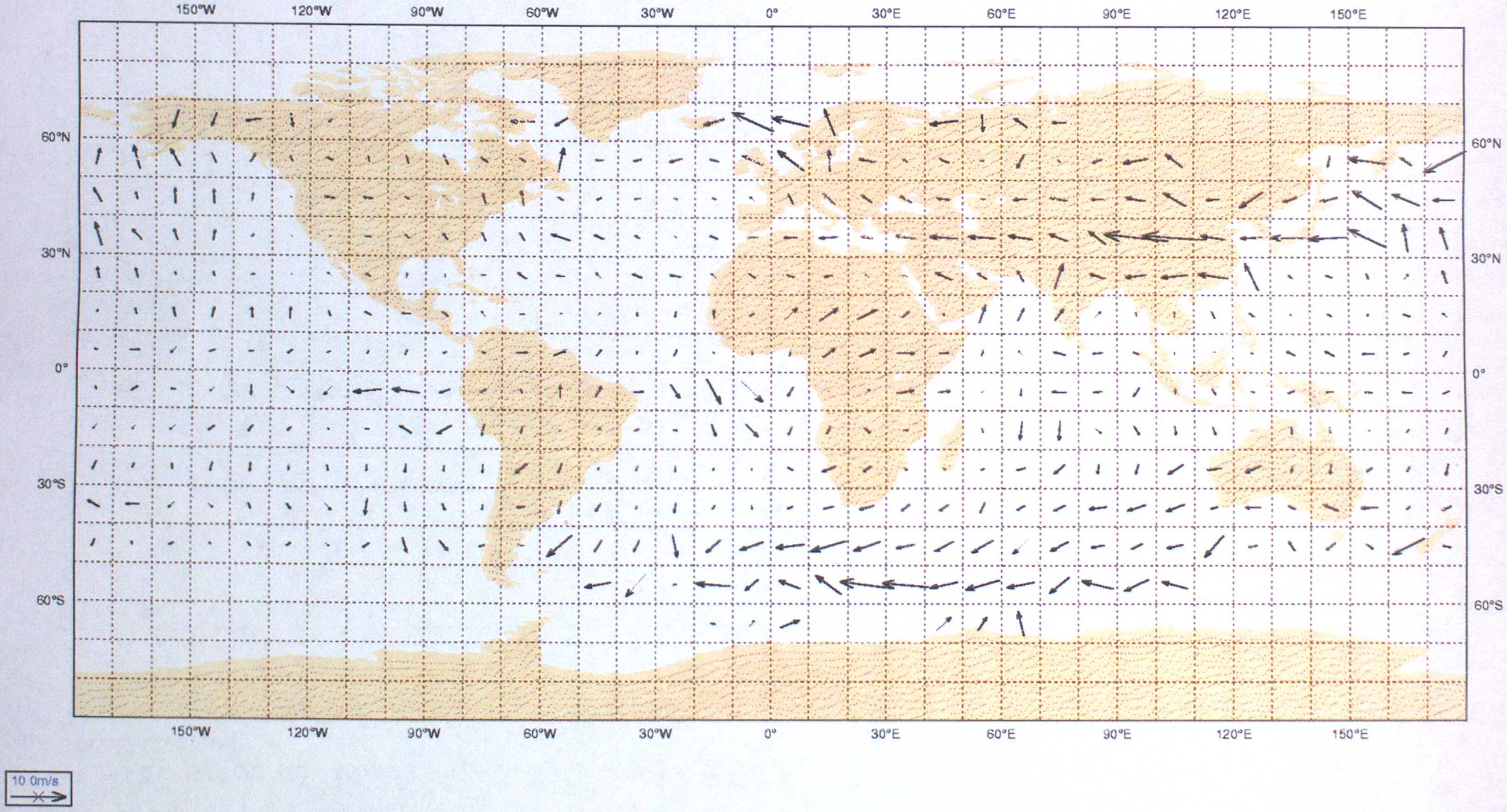
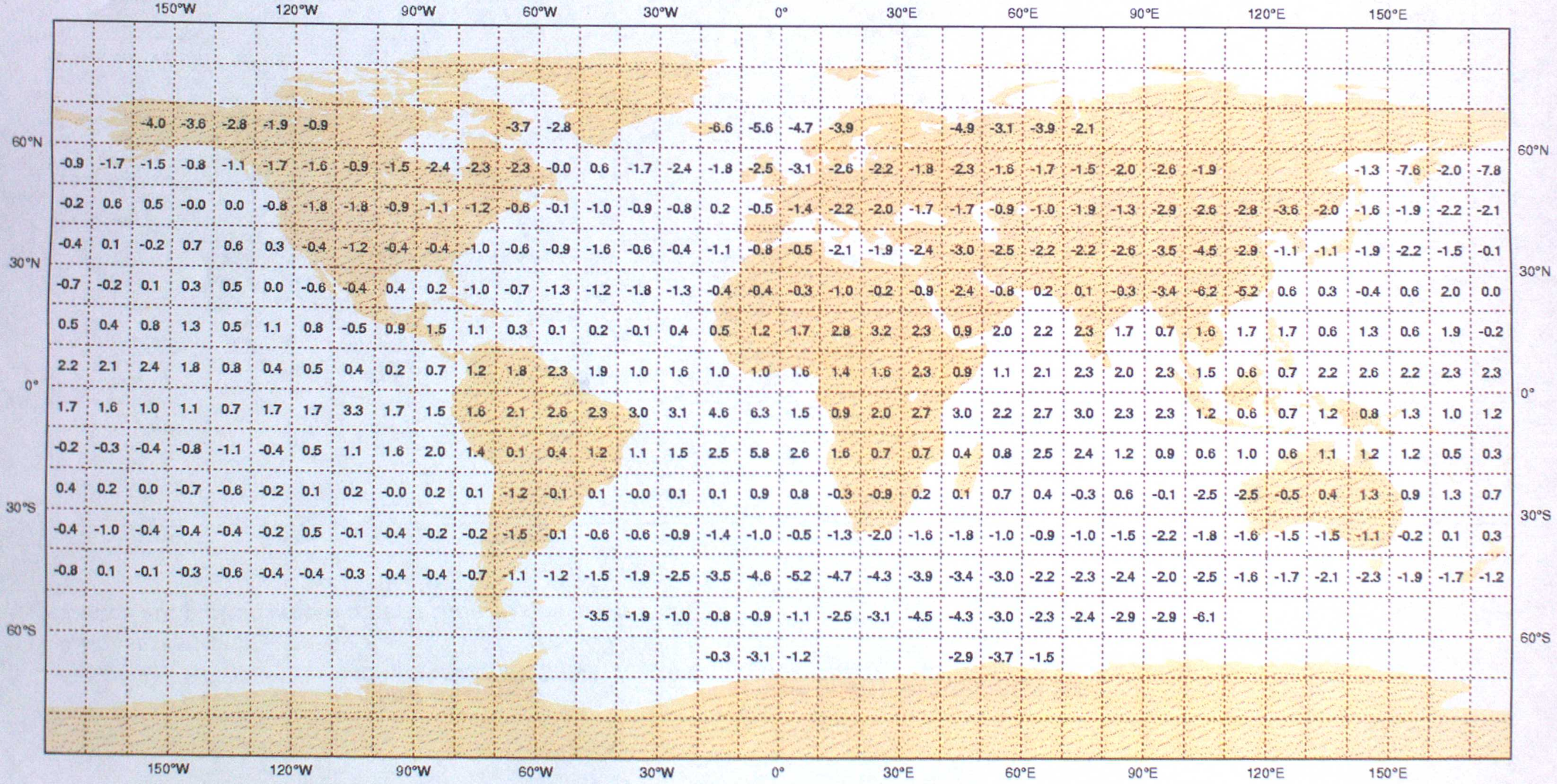
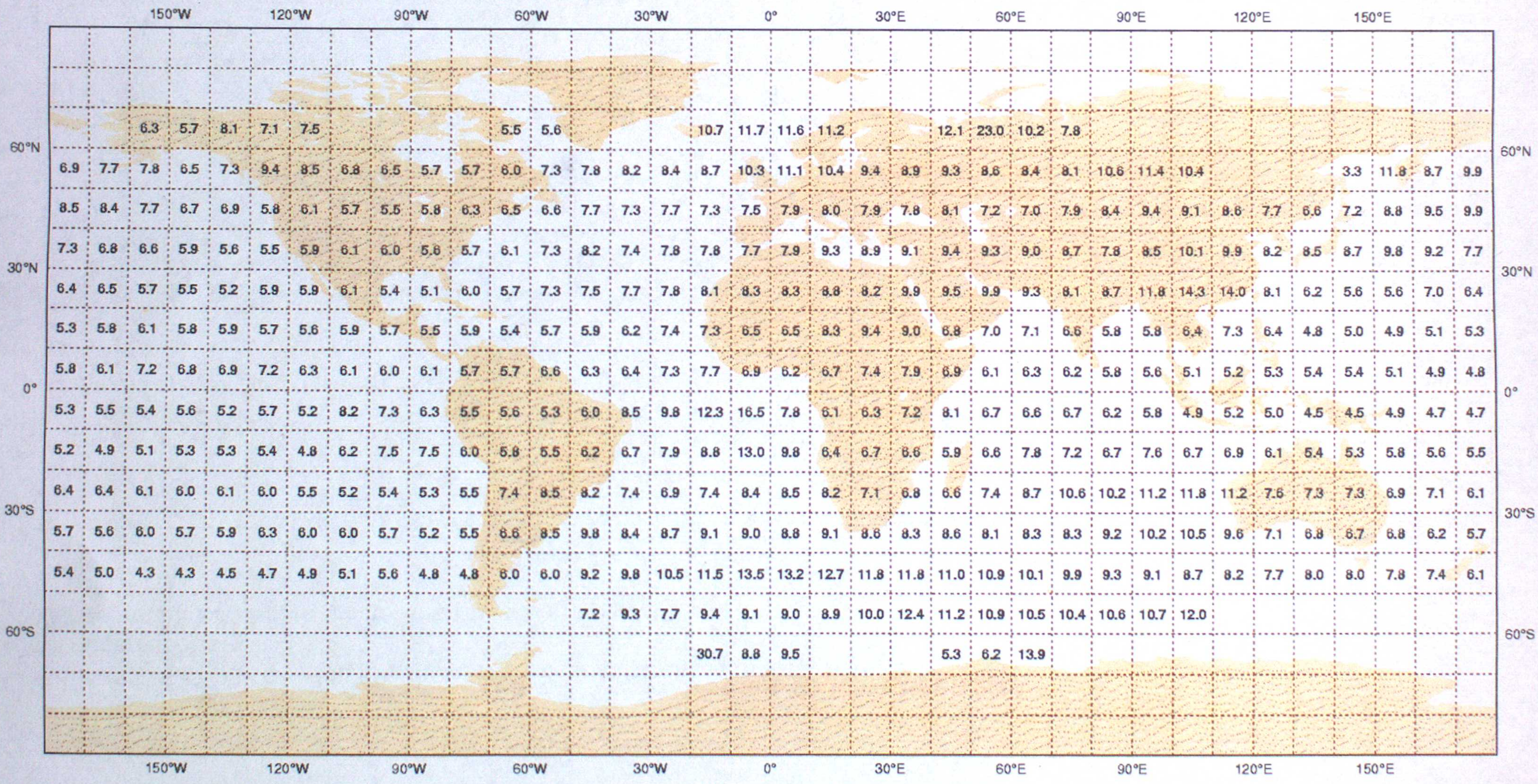

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). NOVEMBER 2004
All observations
Values are plotted where greater than 10 obs are present



		-4.0	-3.6	-2.8	-1.9	-0.9					-3.7	-2.8				-6.6	-5.6	-4.7	-3.9			-4.9	-3.1	-3.9	-2.1										
-0.9	-1.7	-1.5	-0.8	-1.1	-1.7	-1.6	-0.9	-1.5	-2.4	-2.3	-2.3	-0.0	0.6	-1.7	-2.4	-1.8	-2.5	-3.1	-2.6	-2.2	-1.8	-2.3	-1.6	-1.7	-1.5	-2.0	-2.6	-1.9				-1.3	-7.6	-2.0	-7.8
-0.2	0.6	0.5	-0.0	0.0	-0.8	-1.8	-1.8	-0.9	-1.1	-1.2	-0.6	-0.1	-1.0	-0.9	-0.8	0.2	-0.5	-1.4	-2.2	-2.0	-1.7	-1.7	-0.9	-1.0	-1.9	-1.3	-2.9	-2.6	-2.8	-3.6	-2.0	-1.6	-1.9	-2.2	-2.1
-0.4	0.1	-0.2	0.7	0.6	0.3	-0.4	-1.2	-0.4	-0.4	-1.0	-0.6	-0.9	-1.6	-0.6	-0.4	-1.1	-0.8	-0.5	-2.1	-1.9	-2.4	-3.0	-2.5	-2.2	-2.2	-2.6	-3.5	-4.5	-2.9	-1.1	-1.1	-1.9	-2.2	-1.5	-0.1
-0.7	-0.2	0.1	0.3	0.5	0.0	-0.6	-0.4	0.4	0.2	-1.0	-0.7	-1.3	-1.2	-1.8	-1.3	-0.4	-0.4	-0.3	-1.0	-0.2	-0.9	-2.4	-0.8	0.2	0.1	-0.3	-3.4	-6.2	-5.2	0.6	0.3	-0.4	0.6	2.0	0.0
0.5	0.4	0.8	1.3	0.5	1.1	0.8	-0.5	0.9	1.5	1.1	0.3	0.1	0.2	-0.1	0.4	0.5	1.2	1.7	2.8	3.2	2.3	0.9	2.0	2.2	2.3	1.7	0.7	1.6	1.7	1.7	0.6	1.3	0.6	1.9	-0.2
2.2	2.1	2.4	1.8	0.8	0.4	0.5	0.4	0.2	0.7	1.2	1.8	2.3	1.9	1.0	1.6	1.0	1.0	1.6	1.4	1.6	2.3	0.9	1.1	2.1	2.3	2.0	2.3	1.5	0.6	0.7	2.2	2.6	2.2	2.3	2.3
1.7	1.6	1.0	1.1	0.7	1.7	1.7	3.3	1.7	1.5	1.6	2.1	2.6	2.3	3.0	3.1	4.6	6.3	1.5	0.9	2.0	2.7	3.0	2.2	2.7	3.0	2.3	2.3	1.2	0.6	0.7	1.2	0.8	1.3	1.0	1.2
-0.2	-0.3	-0.4	-0.8	-1.1	-0.4	0.5	1.1	1.6	2.0	1.4	0.1	0.4	1.2	1.1	1.5	2.5	5.8	2.6	1.6	0.7	0.7	0.4	0.8	2.5	2.4	1.2	0.9	0.6	1.0	0.6	1.1	1.2	1.2	0.5	0.3
0.4	0.2	0.0	-0.7	-0.6	-0.2	0.1	0.2	-0.0	0.2	0.1	-1.2	-0.1	0.1	-0.0	0.1	0.1	0.9	0.8	-0.3	-0.9	0.2	0.1	0.7	0.4	-0.3	0.6	-0.1	-2.5	-2.5	-0.5	0.4	1.3	0.9	1.3	0.7
-0.4	-1.0	-0.4	-0.4	-0.4	-0.2	0.5	-0.1	-0.4	-0.2	-0.2	-1.5	-0.1	-0.6	-0.6	-0.9	-1.4	-1.0	-0.5	-1.3	-2.0	-1.6	-1.8	-1.0	-0.9	-1.0	-1.5	-2.2	-1.8	-1.6	-1.5	-1.5	-1.1	-0.2	0.1	0.3
-0.8	0.1	-0.1	-0.3	-0.6	-0.4	-0.4	-0.3	-0.4	-0.4	-0.7	-1.1	-1.2	-1.5	-1.9	-2.5	-3.5	-4.6	-5.2	-4.7	-4.3	-3.9	-3.4	-3.0	-2.2	-2.3	-2.4	-2.0	-2.5	-1.6	-1.7	-2.1	-2.3	-1.9	-1.7	-1.2
													-3.5	-1.9	-1.0	-0.8	-0.9	-1.1	-2.5	-3.1	-4.5	-4.3	-3.0	-2.3	-2.4	-2.9	-2.9	-6.1							
																-0.3	-3.1	-1.2				-2.9	-3.7	-1.5											

Figure 24. SATOB 101 - 400 hPa mean RMS O-B vector differences (ms-1). NOVEMBER 2004
All observations
Values are plotted where greater than 10 obs are present



		6.3	5.7	8.1	7.1	7.5					5.5	5.6				10.7	11.7	11.6	11.2			12.1	23.0	10.2	7.8										
6.9	7.7	7.8	6.5	7.3	9.4	8.5	6.8	6.5	5.7	5.7	6.0	7.3	7.8	8.2	8.4	8.7	10.3	11.1	10.4	9.4	8.9	9.3	8.6	8.4	8.1	10.6	11.4	10.4				3.3	11.8	8.7	9.9
8.5	8.4	7.7	6.7	6.9	5.8	6.1	5.7	5.5	5.8	6.3	6.5	6.6	7.7	7.3	7.7	7.3	7.5	7.9	8.0	7.9	7.8	8.1	7.2	7.0	7.9	8.4	9.4	9.1	8.6	7.7	6.6	7.2	8.8	9.5	9.9
7.3	6.8	6.6	5.9	5.6	5.5	5.9	6.1	6.0	5.8	5.7	6.1	7.3	8.2	7.4	7.8	7.8	7.7	7.9	9.3	8.9	9.1	9.4	9.3	9.0	8.7	7.8	8.5	10.1	9.9	8.2	8.5	8.7	9.8	9.2	7.7
6.4	6.5	5.7	5.5	5.2	5.9	5.9	6.1	5.4	5.1	6.0	5.7	7.3	7.5	7.7	7.8	8.1	8.3	8.3	8.8	8.2	9.9	9.5	9.9	9.3	8.1	8.7	11.8	14.3	14.0	8.1	6.2	5.6	5.6	7.0	6.4
5.3	5.8	6.1	5.8	5.9	5.7	5.6	5.9	5.7	5.5	5.9	5.4	5.7	5.9	6.2	7.4	7.3	6.5	6.5	8.3	9.4	9.0	6.8	7.0	7.1	6.6	5.8	5.8	6.4	7.3	6.4	4.8	5.0	4.9	5.1	5.3
5.8	6.1	7.2	6.8	6.9	7.2	6.3	6.1	6.0	6.1	5.7	5.7	6.6	6.3	6.4	7.3	7.7	6.9	6.2	6.7	7.4	7.9	6.9	6.1	6.3	6.2	5.8	5.6	5.1	5.2	5.3	5.4	5.4	5.1	4.9	4.8
5.3	5.5	5.4	5.6	5.2	5.7	5.2	8.2	7.3	6.3	5.5	5.6	5.3	6.0	8.5	9.8	12.3	16.5	7.8	6.1	6.3	7.2	8.1	6.7	6.6	6.7	6.2	5.8	4.9	5.2	5.0	4.5	4.5	4.9	4.7	4.7
5.2	4.9	5.1	5.3	5.3	5.4	4.8	6.2	7.5	7.5	6.0	5.8	5.5	6.2	6.7	7.9	8.8	13.0	9.8	6.4	6.7	6.6	5.9	6.6	7.8	7.2	6.7	7.6	6.7	6.9	6.1	5.4	5.3	5.8	5.6	5.5
6.4	6.4	6.1	6.0	6.1	6.0	5.5	5.2	5.4	5.3	5.5	7.4	8.5	8.2	7.4	6.9	7.4	8.4	8.5	8.2	7.1	6.8	6.6	7.4	8.7	10.6	10.2	11.2	11.8	11.2	7.6	7.3	7.3	6.9	7.1	6.1
5.7	5.6	6.0	5.7	5.9	6.3	6.0	6.0	5.7	5.2	5.5	6.6	8.5	9.8	8.4	8.7	9.1	9.0	8.8	9.1	8.6	8.3	8.6	8.1	8.3	8.3	9.2	10.2	10.5	9.6	7.1	6.8	6.7	6.8	6.2	5.7
5.4	5.0	4.3	4.3	4.5	4.7	4.9	5.1	5.6	4.8	4.8	6.0	6.0	9.2	9.8	10.5	11.5	13.5	13.2	12.7	11.8	11.8	11.0	10.9	10.1	9.9	9.3	9.1	8.7	8.2	7.7	8.0	8.0	7.8	7.4	6.1
													7.2	9.3	7.7	9.4	9.1	9.0	8.9	10.0	12.4	11.2	10.9	10.5	10.4	10.6	10.7	12.0							
																30.7	8.8	9.5				5.3	6.2	13.9											

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: EXETER

MONTH: Nov 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15, NOAA-16 and NOAA-17.

Standard of comparison :Background field from UKMO global model.

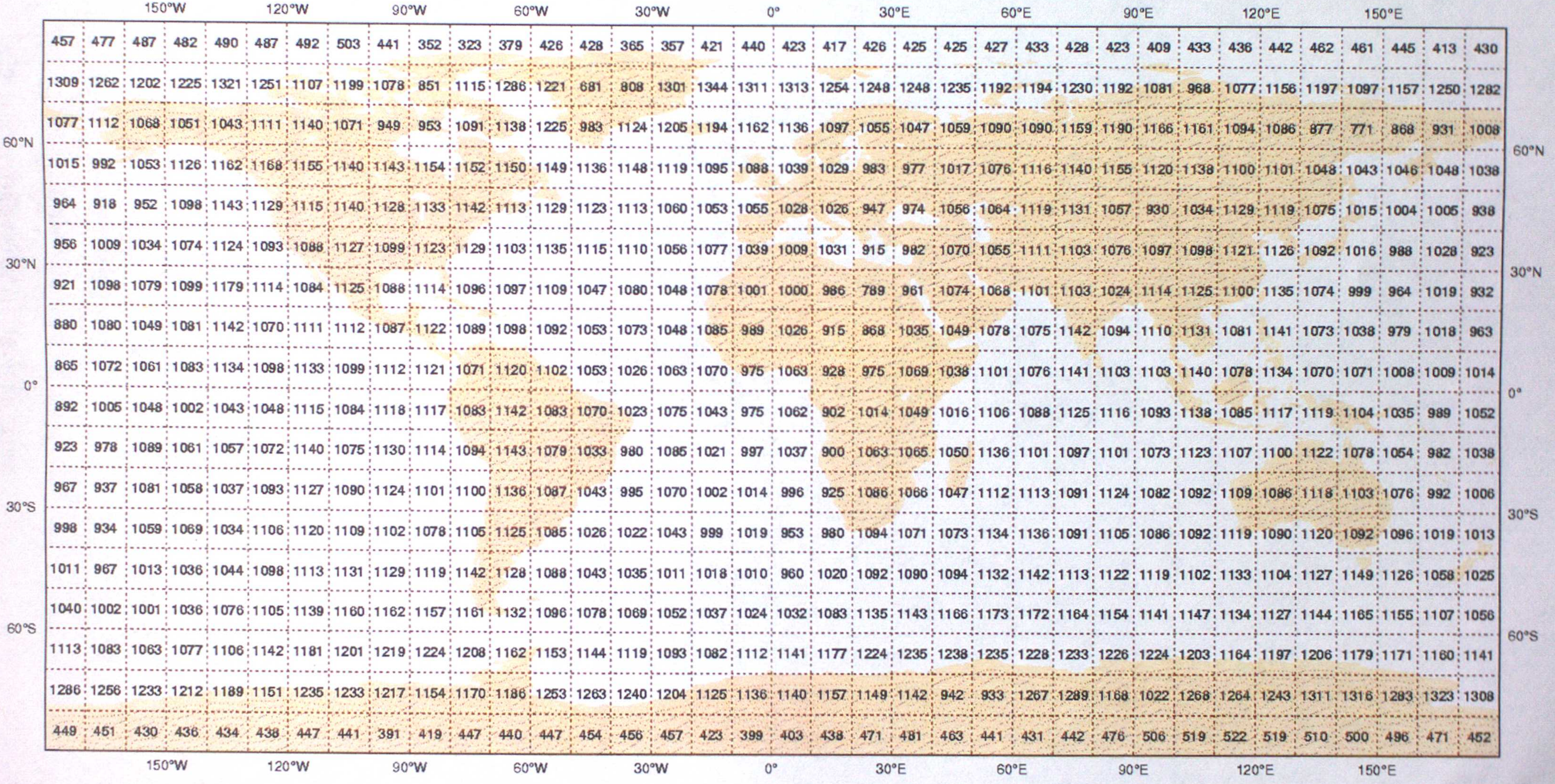
Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)

- HIRS8 (Surface)
- HIRS15 (700)
- HIRS11 (500-700)
- HIRS4 (400)
- AMSUA5 (700)
- AMSUA7 (300)
- AMSUA9 (100)

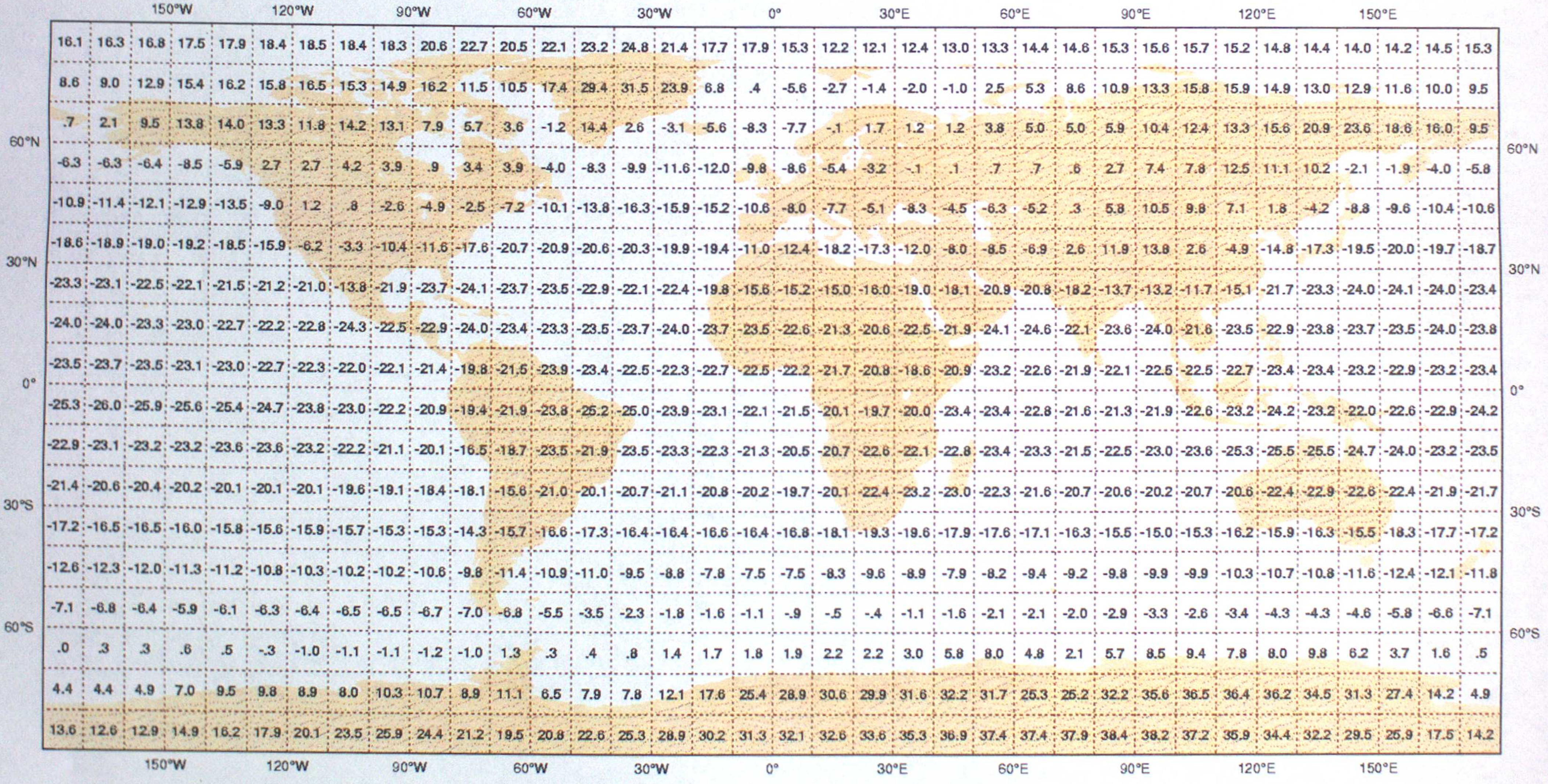
:Mean and standard deviation observation-minus-background brightness temperature differences

Figure 25. ATOVS mean daily count. NOVEMBER 2004
NOAA15, using all observations
Global average number of observations in 24 hours = 660379



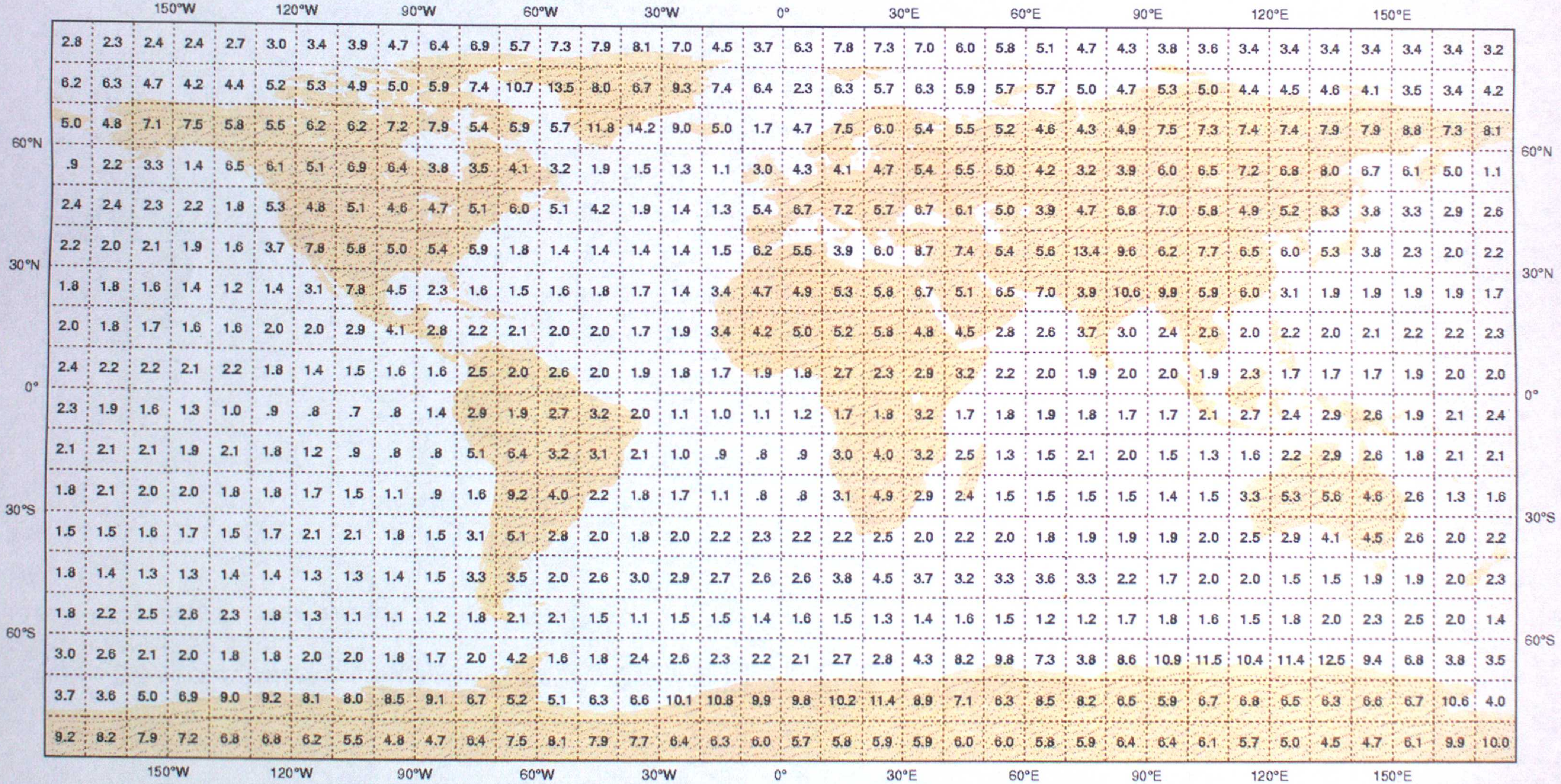
457	477	487	482	490	487	492	503	441	352	323	379	426	428	365	357	421	440	423	417	426	425	425	427	433	428	423	409	433	436	442	462	461	445	413	430
1309	1262	1202	1225	1321	1251	1107	1199	1078	851	1115	1286	1221	681	808	1301	1344	1311	1313	1254	1248	1248	1235	1192	1194	1230	1192	1081	968	1077	1156	1197	1097	1157	1250	1282
1077	1112	1068	1051	1043	1111	1140	1071	949	953	1091	1138	1225	983	1124	1205	1194	1162	1136	1097	1055	1047	1059	1090	1090	1159	1190	1166	1161	1094	1086	877	771	868	931	1008
1015	992	1053	1126	1162	1168	1155	1140	1143	1154	1152	1150	1149	1136	1148	1119	1095	1088	1039	1029	983	977	1017	1076	1116	1140	1155	1120	1138	1100	1101	1048	1043	1046	1048	1038
964	918	952	1098	1143	1129	1115	1140	1128	1133	1142	1113	1129	1123	1113	1060	1053	1055	1028	1026	947	974	1056	1064	1119	1131	1057	930	1034	1129	1119	1075	1015	1004	1005	938
956	1009	1034	1074	1124	1093	1088	1127	1099	1123	1129	1103	1135	1115	1110	1056	1077	1039	1009	1031	915	982	1070	1055	1111	1103	1076	1097	1098	1121	1126	1092	1016	988	1028	923
921	1098	1079	1099	1179	1114	1084	1125	1088	1114	1096	1097	1109	1047	1080	1048	1078	1001	1000	986	789	961	1074	1068	1101	1103	1024	1114	1125	1100	1135	1074	999	964	1019	932
880	1080	1049	1081	1142	1070	1111	1112	1087	1122	1089	1098	1092	1053	1073	1048	1085	989	1026	915	868	1035	1049	1078	1075	1142	1094	1110	1131	1081	1141	1073	1038	979	1018	963
865	1072	1061	1083	1134	1098	1133	1099	1112	1121	1071	1120	1102	1053	1026	1063	1070	975	1063	928	975	1069	1038	1101	1076	1141	1103	1103	1140	1078	1134	1070	1071	1008	1009	1014
892	1005	1048	1002	1043	1048	1115	1084	1118	1117	1083	1142	1083	1070	1023	1075	1043	975	1062	902	1014	1049	1016	1106	1088	1125	1116	1093	1138	1085	1117	1119	1104	1035	989	1052
923	978	1089	1061	1057	1072	1140	1075	1130	1114	1094	1143	1079	1033	980	1085	1021	997	1037	900	1063	1065	1050	1136	1101	1097	1101	1073	1123	1107	1100	1122	1078	1054	982	1038
967	937	1081	1058	1037	1093	1127	1090	1124	1101	1100	1136	1087	1043	995	1070	1002	1014	996	925	1086	1066	1047	1112	1113	1091	1124	1082	1092	1109	1086	1118	1103	1076	992	1006
998	934	1059	1069	1034	1106	1120	1109	1102	1078	1105	1125	1085	1026	1022	1043	999	1019	953	980	1094	1071	1073	1134	1136	1091	1105	1086	1092	1119	1090	1120	1092	1096	1019	1013
1011	967	1013	1036	1044	1098	1113	1131	1129	1119	1142	1128	1088	1043	1035	1011	1018	1010	960	1020	1092	1090	1094	1132	1142	1113	1122	1119	1102	1133	1104	1127	1149	1126	1058	1025
1040	1002	1001	1036	1076	1105	1139	1160	1162	1157	1161	1132	1096	1078	1069	1052	1037	1024	1032	1083	1135	1143	1166	1173	1172	1164	1154	1141	1147	1134	1127	1144	1165	1155	1107	1056
1113	1083	1063	1077	1106	1142	1181	1201	1219	1224	1208	1162	1153	1144	1119	1093	1082	1112	1141	1177	1224	1235	1238	1235	1228	1233	1226	1224	1203	1164	1197	1206	1179	1171	1160	1141
1286	1256	1233	1212	1189	1151	1235	1233	1217	1154	1170	1186	1253	1263	1240	1204	1125	1136	1140	1157	1149	1142	942	933	1267	1289	1168	1022	1268	1264	1243	1311	1316	1283	1323	1308
449	451	430	436	434	438	447	441	391	419	447	440	447	454	456	457	423	399	403	438	471	481	463	441	431	442	476	506	519	522	519	510	500	496	471	452

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS8 (Surface)
NOAA15, using all observations



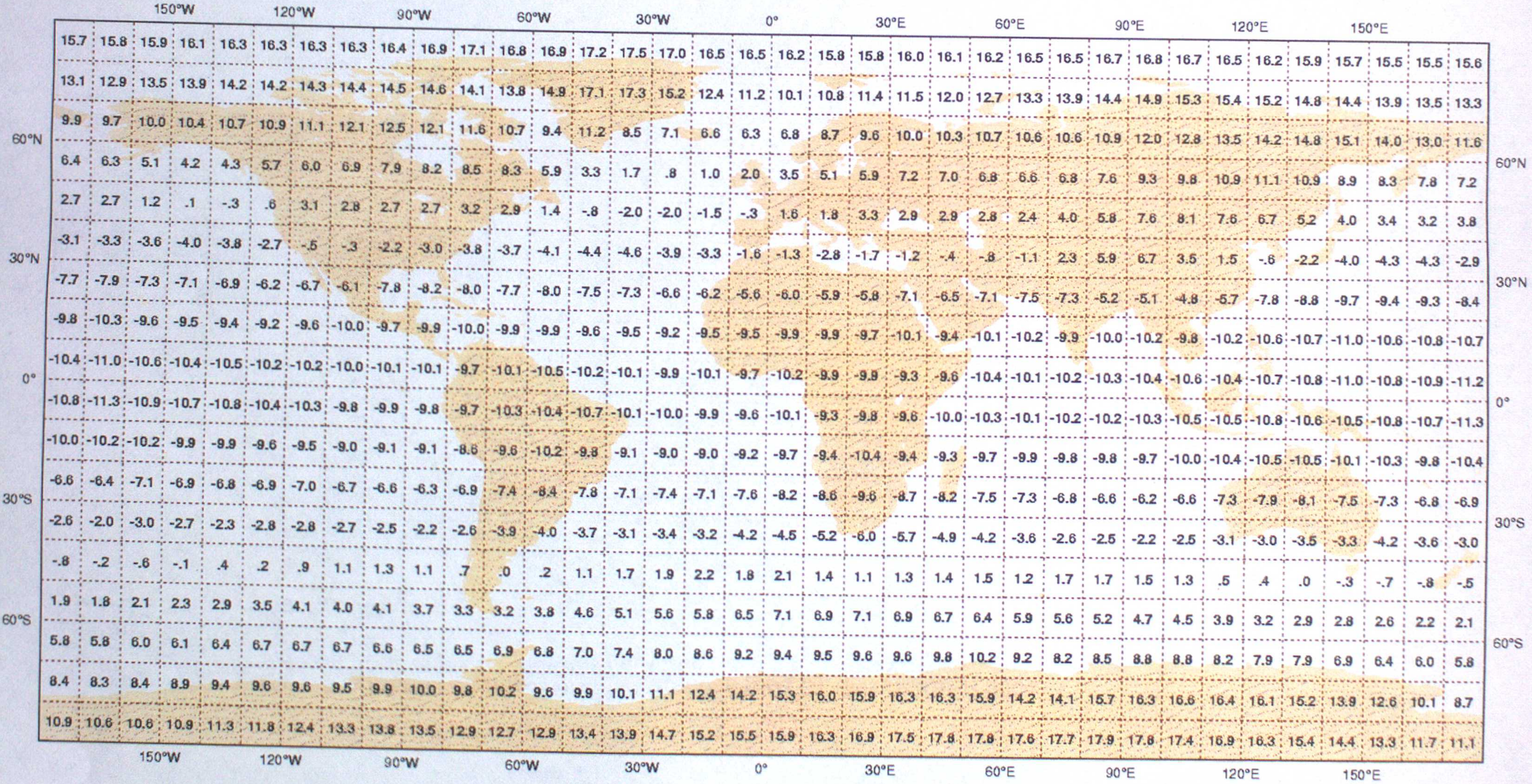
16.1	16.3	16.8	17.5	17.9	18.4	18.5	18.4	18.3	20.6	22.7	20.5	22.1	23.2	24.8	21.4	17.7	17.9	15.3	12.2	12.1	12.4	13.0	13.3	14.4	14.6	15.3	15.6	15.7	15.2	14.8	14.4	14.0	14.2	14.5	15.3
8.6	9.0	12.9	15.4	16.2	15.8	16.5	15.3	14.9	16.2	11.5	10.5	17.4	29.4	31.5	23.9	6.8	.4	-5.6	-2.7	-1.4	-2.0	-1.0	2.5	5.3	8.6	10.9	13.3	15.8	15.9	14.9	13.0	12.9	11.6	10.0	9.5
.7	2.1	9.5	13.8	14.0	13.3	11.8	14.2	13.1	7.9	5.7	3.6	-1.2	14.4	2.6	-3.1	-5.6	-8.3	-7.7	-.1	1.7	1.2	1.2	3.8	5.0	5.0	5.9	10.4	12.4	13.3	15.6	20.9	23.6	18.6	16.0	9.5
-6.3	-6.3	-6.4	-8.5	-5.9	2.7	2.7	4.2	3.9	.9	3.4	3.9	-4.0	-8.3	-9.9	-11.6	-12.0	-9.8	-8.6	-5.4	-3.2	-.1	.1	.7	.7	.6	2.7	7.4	7.8	12.5	11.1	10.2	-2.1	-1.9	-4.0	-5.8
-10.9	-11.4	-12.1	-12.9	-13.5	-9.0	1.2	.8	-2.6	-4.9	-2.5	-7.2	-10.1	-13.8	-16.3	-15.9	-15.2	-10.6	-8.0	-7.7	-5.1	-8.3	-4.5	-6.3	-5.2	.3	5.8	10.5	9.8	7.1	1.8	-4.2	-8.8	-9.6	-10.4	-10.6
-18.6	-18.9	-19.0	-19.2	-18.5	-15.9	-6.2	-3.3	-10.4	-11.6	-17.6	-20.7	-20.9	-20.6	-20.3	-19.9	-19.4	-11.0	-12.4	-18.2	-17.3	-12.0	-8.0	-8.5	-6.9	2.6	11.9	13.8	2.6	-4.9	-14.8	-17.3	-19.5	-20.0	-19.7	-18.7
-23.3	-23.1	-22.5	-22.1	-21.5	-21.2	-21.0	-13.8	-21.9	-23.7	-24.1	-23.7	-23.5	-22.9	-22.1	-22.4	-19.8	-15.6	-15.2	-15.0	-16.0	-19.0	-18.1	-20.9	-20.8	-18.2	-13.7	-13.2	-11.7	-15.1	-21.7	-23.3	-24.0	-24.1	-24.0	-23.4
-24.0	-24.0	-23.3	-23.0	-22.7	-22.2	-22.8	-24.3	-22.5	-22.9	-24.0	-23.4	-23.3	-23.5	-23.7	-24.0	-23.7	-23.5	-22.6	-21.3	-20.6	-22.5	-21.9	-24.1	-24.6	-22.1	-23.6	-24.0	-21.6	-23.5	-22.9	-23.8	-23.7	-23.5	-24.0	-23.8
-23.5	-23.7	-23.5	-23.1	-23.0	-22.7	-22.3	-22.0	-22.1	-21.4	-19.8	-21.5	-23.9	-23.4	-22.5	-22.3	-22.7	-22.5	-22.2	-21.7	-20.8	-18.6	-20.9	-23.2	-22.6	-21.9	-22.1	-22.5	-22.5	-22.7	-23.4	-23.4	-23.2	-22.9	-23.2	-23.4
-25.3	-26.0	-25.9	-25.6	-25.4	-24.7	-23.8	-23.0	-22.2	-20.9	-19.4	-21.9	-23.8	-25.2	-25.0	-23.9	-23.1	-22.1	-21.5	-20.1	-19.7	-20.0	-23.4	-23.4	-22.8	-21.6	-21.3	-21.9	-22.6	-23.2	-24.2	-23.2	-22.0	-22.6	-22.9	-24.2
-22.9	-23.1	-23.2	-23.2	-23.6	-23.6	-23.2	-22.2	-21.1	-20.1	-16.5	-18.7	-23.5	-21.9	-23.5	-23.3	-22.3	-21.3	-20.5	-20.7	-22.6	-22.1	-22.8	-23.4	-23.3	-21.5	-22.5	-23.0	-23.6	-25.3	-25.5	-25.5	-24.7	-24.0	-23.2	-23.5
-21.4	-20.6	-20.4	-20.2	-20.1	-20.1	-20.1	-19.6	-19.1	-18.4	-18.1	-15.6	-21.0	-20.1	-20.7	-21.1	-20.8	-20.2	-19.7	-20.1	-22.4	-23.2	-23.0	-22.3	-21.6	-20.7	-20.6	-20.2	-20.7	-20.6	-22.4	-22.9	-22.6	-22.4	-21.9	-21.7
-17.2	-16.5	-16.5	-16.0	-15.8	-15.6	-15.9	-15.7	-15.3	-15.3	-14.3	-15.7	-16.6	-17.3	-16.4	-16.4	-16.6	-16.4	-16.8	-18.1	-19.3	-19.6	-17.9	-17.6	-17.1	-16.3	-15.5	-15.0	-15.3	-16.2	-15.9	-16.3	-15.5	-18.3	-17.7	-17.2
-12.6	-12.3	-12.0	-11.3	-11.2	-10.8	-10.3	-10.2	-10.2	-10.6	-9.8	-11.4	-10.9	-11.0	-9.5	-8.8	-7.8	-7.5	-7.5	-8.3	-9.6	-8.9	-7.9	-8.2	-9.4	-9.2	-9.8	-9.9	-9.9	-10.3	-10.7	-10.8	-11.6	-12.4	-12.1	-11.8
-7.1	-6.8	-6.4	-5.9	-6.1	-6.3	-6.4	-6.5	-6.5	-6.7	-7.0	-6.8	-5.5	-3.5	-2.3	-1.8	-1.6	-1.1	-.9	-.5	-.4	-1.1	-1.6	-2.1	-2.1	-2.0	-2.9	-3.3	-2.6	-3.4	-4.3	-4.3	-4.6	-5.8	-6.6	-7.1
.0	.3	.3	.6	.5	-.3	-1.0	-1.1	-1.1	-1.2	-1.0	1.3	.3	.4	.8	1.4	1.7	1.8	1.9	2.2	2.2	3.0	5.8	8.0	4.8	2.1	5.7	8.5	9.4	7.8	8.0	9.8	6.2	3.7	1.6	.5
4.4	4.4	4.9	7.0	9.5	9.8	8.9	8.0	10.3	10.7	8.9	11.1	6.5	7.9	7.8	12.1	17.6	25.4	28.9	30.6	29.9	31.6	32.2	31.7	25.3	25.2	32.2	35.6	36.5	36.4	36.2	34.5	31.3	27.4	14.2	4.9
13.6	12.6	12.9	14.9	16.2	17.9	20.1	23.5	25.9	24.4	21.2	19.5	20.8	22.6	25.3	28.9	30.2	31.3	32.1	32.6	33.6	35.3	36.9	37.4	37.4	37.9	38.4	38.2	37.2	35.9	34.4	32.2	29.5	25.9	17.5	14.2

Figure 27. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS8 (Surface)
NOAA15, using all observations



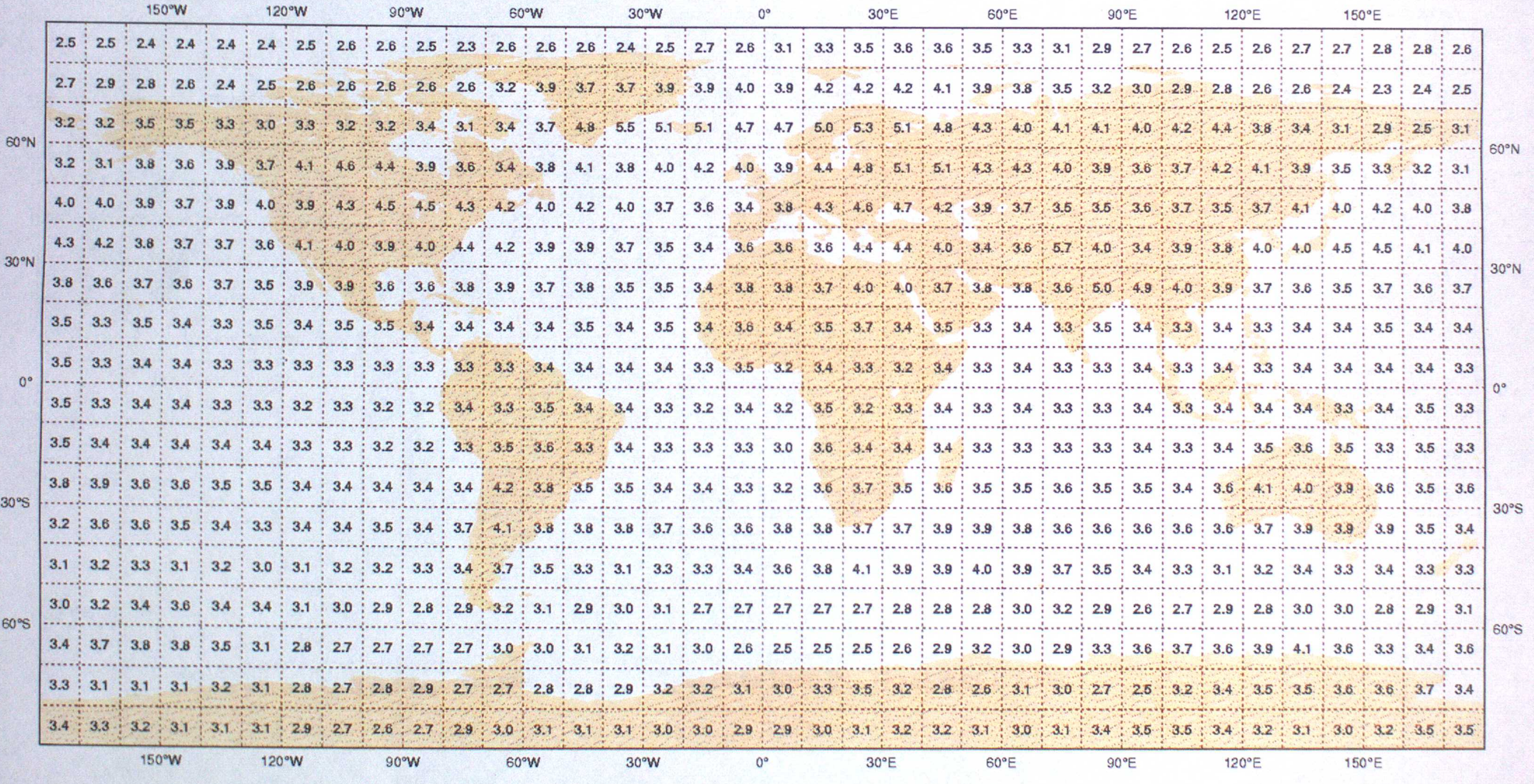
2.8	2.3	2.4	2.4	2.7	3.0	3.4	3.9	4.7	6.4	6.9	5.7	7.3	7.9	8.1	7.0	4.5	3.7	6.3	7.8	7.3	7.0	6.0	5.8	5.1	4.7	4.3	3.8	3.6	3.4	3.4	3.4	3.4	3.4	3.4	3.2
6.2	6.3	4.7	4.2	4.4	5.2	5.3	4.9	5.0	5.9	7.4	10.7	13.5	8.0	6.7	9.3	7.4	6.4	2.3	6.3	5.7	6.3	5.9	5.7	5.7	5.0	4.7	5.3	5.0	4.4	4.5	4.6	4.1	3.5	3.4	4.2
5.0	4.8	7.1	7.5	5.8	5.5	6.2	6.2	7.2	7.9	5.4	5.9	5.7	11.8	14.2	9.0	5.0	1.7	4.7	7.5	6.0	5.4	5.5	5.2	4.6	4.3	4.9	7.5	7.3	7.4	7.4	7.9	7.9	8.8	7.3	8.1
.9	2.2	3.3	1.4	6.5	6.1	5.1	6.9	6.4	3.8	3.5	4.1	3.2	1.9	1.5	1.3	1.1	3.0	4.3	4.1	4.7	5.4	5.5	5.0	4.2	3.2	3.9	6.0	6.5	7.2	6.8	8.0	6.7	6.1	5.0	1.1
2.4	2.4	2.3	2.2	1.8	5.3	4.8	5.1	4.6	4.7	5.1	6.0	5.1	4.2	1.9	1.4	1.3	5.4	6.7	7.2	5.7	6.7	6.1	5.0	3.9	4.7	6.8	7.0	5.8	4.9	5.2	8.3	3.8	3.3	2.9	2.6
2.2	2.0	2.1	1.9	1.6	3.7	7.8	5.8	5.0	5.4	5.9	1.8	1.4	1.4	1.4	1.4	1.5	6.2	5.5	3.9	6.0	8.7	7.4	5.4	5.6	13.4	9.6	6.2	7.7	6.5	6.0	5.3	3.8	2.3	2.0	2.2
1.8	1.8	1.6	1.4	1.2	1.4	3.1	7.8	4.5	2.3	1.6	1.5	1.6	1.8	1.7	1.4	3.4	4.7	4.9	5.3	5.8	6.7	5.1	6.5	7.0	3.9	10.6	9.9	5.9	6.0	3.1	1.9	1.9	1.9	1.9	1.7
2.0	1.8	1.7	1.6	1.6	2.0	2.0	2.9	4.1	2.8	2.2	2.1	2.0	2.0	1.7	1.9	3.4	4.2	5.0	5.2	5.8	4.8	4.5	2.8	2.6	3.7	3.0	2.4	2.6	2.0	2.2	2.0	2.1	2.2	2.2	2.3
2.4	2.2	2.2	2.1	2.2	1.8	1.4	1.5	1.6	1.6	2.5	2.0	2.6	2.0	1.9	1.8	1.7	1.9	1.8	2.7	2.3	2.9	3.2	2.2	2.0	1.9	2.0	2.0	1.9	2.3	1.7	1.7	1.7	1.9	2.0	2.0
2.3	1.9	1.6	1.3	1.0	.9	.8	.7	.8	1.4	2.9	1.9	2.7	3.2	2.0	1.1	1.0	1.1	1.2	1.7	1.8	3.2	1.7	1.8	1.9	1.8	1.7	1.7	2.1	2.7	2.4	2.9	2.6	1.9	2.1	2.4
2.1	2.1	2.1	1.9	2.1	1.8	1.2	.9	.8	.8	5.1	6.4	3.2	3.1	2.1	1.0	.9	.8	.9	3.0	4.0	3.2	2.5	1.3	1.5	2.1	2.0	1.5	1.3	1.6	2.2	2.9	2.6	1.8	2.1	2.1
1.8	2.1	2.0	2.0	1.8	1.8	1.7	1.5	1.1	.9	1.6	9.2	4.0	2.2	1.8	1.7	1.1	.8	.8	3.1	4.9	2.9	2.4	1.5	1.5	1.5	1.5	1.4	1.5	3.3	5.3	5.6	4.6	2.6	1.3	1.6
1.5	1.5	1.6	1.7	1.5	1.7	2.1	2.1	1.8	1.5	3.1	5.1	2.8	2.0	1.8	2.0	2.2	2.3	2.2	2.2	2.5	2.0	2.2	2.0	1.8	1.9	1.9	1.9	2.0	2.5	2.9	4.1	4.5	2.6	2.0	2.2
1.8	1.4	1.3	1.3	1.4	1.4	1.3	1.3	1.4	1.5	3.3	3.5	2.0	2.6	3.0	2.9	2.7	2.6	2.6	3.8	4.5	3.7	3.2	3.3	3.6	3.3	2.2	1.7	2.0	2.0	1.5	1.5	1.9	1.9	2.0	2.3
1.8	2.2	2.5	2.6	2.3	1.8	1.3	1.1	1.1	1.2	1.8	2.1	2.1	1.5	1.1	1.5	1.5	1.4	1.6	1.5	1.3	1.4	1.6	1.5	1.2	1.2	1.7	1.8	1.6	1.5	1.8	2.0	2.3	2.5	2.0	1.4
3.0	2.6	2.1	2.0	1.8	1.8	2.0	2.0	1.8	1.7	2.0	4.2	1.6	1.8	2.4	2.6	2.3	2.2	2.1	2.7	2.8	4.3	8.2	9.8	7.3	3.8	8.6	10.9	11.5	10.4	11.4	12.5	9.4	6.8	3.8	3.5
3.7	3.6	5.0	6.9	9.0	9.2	8.1	8.0	8.5	9.1	6.7	5.2	5.1	6.3	6.6	10.1	10.8	9.9	9.8	10.2	11.4	8.9	7.1	6.3	8.5	8.2	6.5	5.9	6.7	6.8	6.5	6.3	6.6	6.7	10.6	4.0
9.2	8.2	7.9	7.2	6.8	6.8	6.2	5.5	4.8	4.7	6.4	7.5	8.1	7.9	7.7	6.4	6.3	6.0	5.7	5.8	5.9	5.9	6.0	6.0	5.8	5.9	6.4	6.4	6.1	5.7	5.0	4.5	4.7	6.1	9.9	10.0

Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS15 (700 hPa)
NOAA15, using all observations



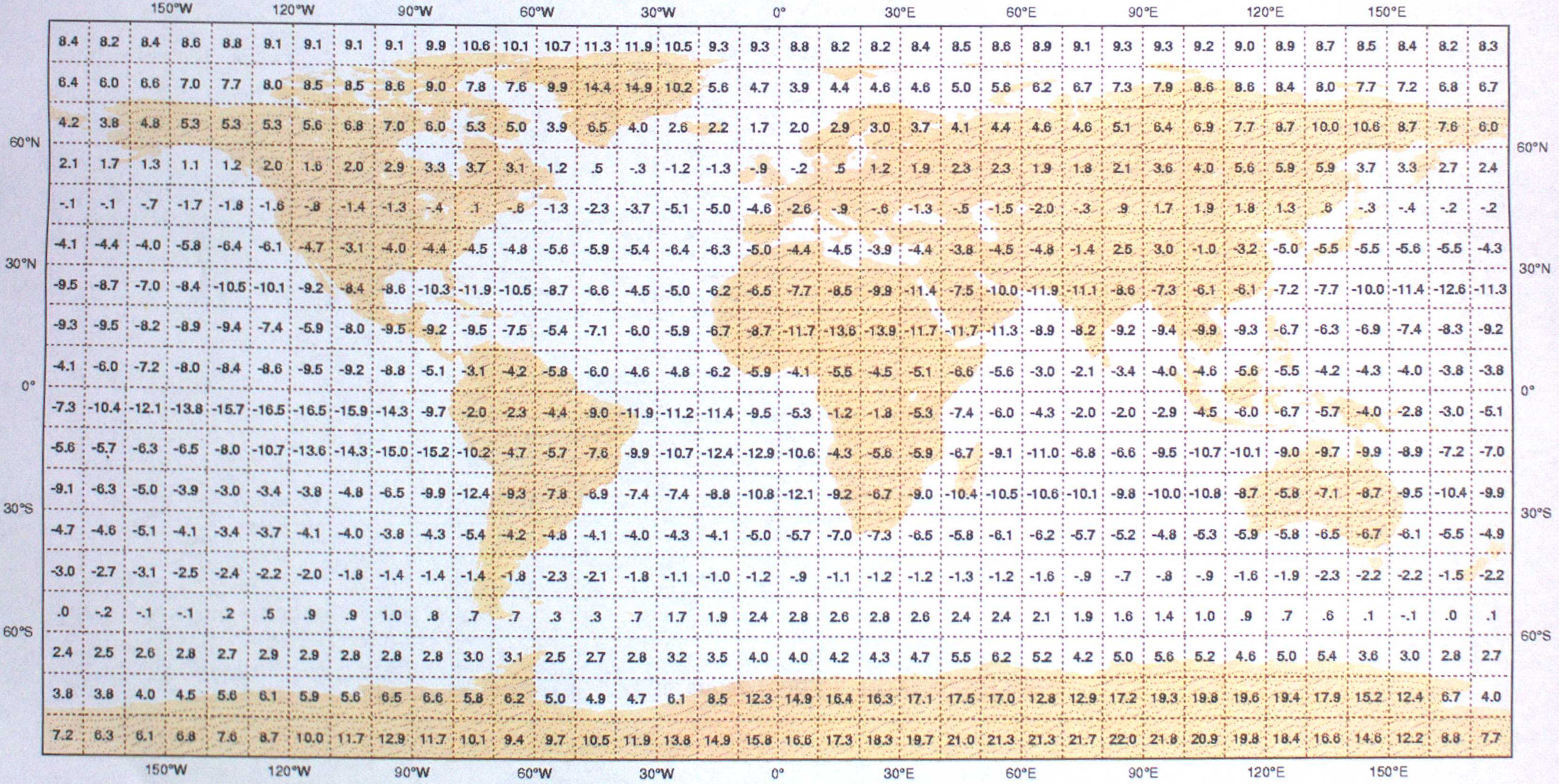
15.7	15.8	15.9	16.1	16.3	16.3	16.3	16.3	16.4	16.9	17.1	16.8	16.9	17.2	17.5	17.0	16.5	16.5	16.2	15.8	15.8	16.0	16.1	16.2	16.5	16.5	16.7	16.8	16.7	16.5	16.2	15.9	15.7	15.5	15.5	15.6
13.1	12.9	13.5	13.9	14.2	14.2	14.3	14.4	14.5	14.6	14.1	13.8	14.9	17.1	17.3	15.2	12.4	11.2	10.1	10.8	11.4	11.5	12.0	12.7	13.3	13.9	14.4	14.9	15.3	15.4	15.2	14.8	14.4	13.9	13.5	13.3
9.9	9.7	10.0	10.4	10.7	10.9	11.1	12.1	12.5	12.1	11.6	10.7	9.4	11.2	8.5	7.1	6.6	6.3	6.8	8.7	9.6	10.0	10.3	10.7	10.6	10.6	10.9	12.0	12.8	13.5	14.2	14.8	15.1	14.0	13.0	11.6
6.4	6.3	5.1	4.2	4.3	5.7	6.0	6.9	7.9	8.2	8.5	8.3	5.9	3.3	1.7	.8	1.0	2.0	3.5	5.1	5.9	7.2	7.0	6.8	6.6	6.8	7.6	9.3	9.8	10.9	11.1	10.9	8.9	8.3	7.8	7.2
2.7	2.7	1.2	.1	-.3	.6	3.1	2.8	2.7	2.7	3.2	2.9	1.4	-.8	-2.0	-2.0	-1.5	-.3	1.6	1.8	3.3	2.9	2.9	2.8	2.4	4.0	5.8	7.6	8.1	7.6	6.7	5.2	4.0	3.4	3.2	3.8
-3.1	-3.3	-3.6	-4.0	-3.8	-2.7	-.5	-.3	-2.2	-3.0	-3.8	-3.7	-4.1	-4.4	-4.6	-3.9	-3.3	-1.6	-1.3	-2.8	-1.7	-1.2	-.4	-.8	-1.1	2.3	5.9	6.7	3.5	1.5	-.6	-2.2	-4.0	-4.3	-4.3	-2.9
-7.7	-7.9	-7.3	-7.1	-6.9	-6.2	-6.7	-6.1	-7.8	-8.2	-8.0	-7.7	-8.0	-7.5	-7.3	-6.6	-6.2	-5.6	-6.0	-5.9	-5.8	-7.1	-6.5	-7.1	-7.5	-7.3	-5.2	-5.1	-4.8	-5.7	-7.8	-8.8	-9.7	-9.4	-9.3	-8.4
-9.8	-10.3	-9.6	-9.5	-9.4	-9.2	-9.6	-10.0	-9.7	-9.9	-10.0	-9.9	-9.9	-9.6	-9.5	-9.2	-9.5	-9.5	-9.9	-9.9	-9.7	-10.1	-9.4	-10.1	-10.2	-9.9	-10.0	-10.2	-9.8	-10.2	-10.6	-10.7	-11.0	-10.6	-10.8	-10.7
-10.4	-11.0	-10.6	-10.4	-10.5	-10.2	-10.2	-10.0	-10.1	-10.1	-9.7	-10.1	-10.5	-10.2	-10.1	-9.9	-10.1	-9.7	-10.2	-9.9	-9.9	-9.3	-9.6	-10.4	-10.1	-10.2	-10.3	-10.4	-10.6	-10.4	-10.7	-10.8	-11.0	-10.8	-10.9	-11.2
-10.8	-11.3	-10.9	-10.7	-10.8	-10.4	-10.3	-9.8	-9.9	-9.8	-9.7	-10.3	-10.4	-10.7	-10.1	-10.0	-9.9	-9.6	-10.1	-9.3	-9.8	-9.6	-10.0	-10.3	-10.1	-10.2	-10.2	-10.3	-10.5	-10.5	-10.8	-10.6	-10.5	-10.8	-10.7	-11.3
-10.0	-10.2	-10.2	-9.9	-9.9	-9.6	-9.5	-9.0	-9.1	-9.1	-8.6	-9.6	-10.2	-9.8	-9.1	-9.0	-9.0	-9.2	-9.7	-9.4	-10.4	-9.4	-9.3	-9.7	-9.9	-9.8	-9.8	-9.7	-10.0	-10.4	-10.5	-10.5	-10.1	-10.3	-9.8	-10.4
-6.6	-6.4	-7.1	-6.9	-6.8	-6.9	-7.0	-6.7	-6.6	-6.3	-6.9	-7.4	-8.4	-7.8	-7.1	-7.4	-7.1	-7.6	-8.2	-8.6	-9.6	-8.7	-8.2	-7.5	-7.3	-6.8	-6.6	-6.2	-6.6	-7.3	-7.9	-8.1	-7.5	-7.3	-6.8	-6.9
-2.6	-2.0	-3.0	-2.7	-2.3	-2.8	-2.8	-2.7	-2.5	-2.2	-2.6	-3.9	-4.0	-3.7	-3.1	-3.4	-3.2	-4.2	-4.5	-5.2	-6.0	-5.7	-4.9	-4.2	-3.6	-2.6	-2.5	-2.2	-2.5	-3.1	-3.0	-3.5	-3.3	-4.2	-3.6	-3.0
-.8	-.2	-.6	-.1	.4	.2	.9	1.1	1.3	1.1	.7	.0	.2	1.1	1.7	1.9	2.2	1.8	2.1	1.4	1.1	1.3	1.4	1.5	1.2	1.7	1.7	1.5	1.3	.5	.4	.0	-.3	-.7	-.8	-.5
1.9	1.8	2.1	2.3	2.9	3.5	4.1	4.0	4.1	3.7	3.3	3.2	3.8	4.6	5.1	5.6	5.8	6.5	7.1	6.9	7.1	6.9	6.7	6.4	5.9	5.6	5.2	4.7	4.5	3.9	3.2	2.9	2.8	2.6	2.2	2.1
5.8	5.8	6.0	6.1	6.4	6.7	6.7	6.7	6.6	6.5	6.5	6.9	6.8	7.0	7.4	8.0	8.6	9.2	9.4	9.5	9.6	9.6	9.8	10.2	9.2	8.2	8.5	8.8	8.8	8.2	7.9	7.9	6.9	6.4	6.0	5.8
8.4	8.3	8.4	8.9	9.4	9.6	9.6	9.5	9.9	10.0	9.8	10.2	9.6	9.9	10.1	11.1	12.4	14.2	15.3	16.0	15.9	16.3	16.3	15.9	14.2	14.1	15.7	16.3	16.6	16.4	16.1	15.2	13.9	12.6	10.1	8.7
10.9	10.6	10.6	10.9	11.3	11.8	12.4	13.3	13.8	13.5	12.9	12.7	12.9	13.4	13.9	14.7	15.2	15.5	15.9	16.3	16.9	17.5	17.8	17.8	17.6	17.7	17.9	17.8	17.4	16.9	16.3	15.4	14.4	13.3	11.7	11.1

Figure 29. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS15 (700 hPa)
NOAA15, using all observations



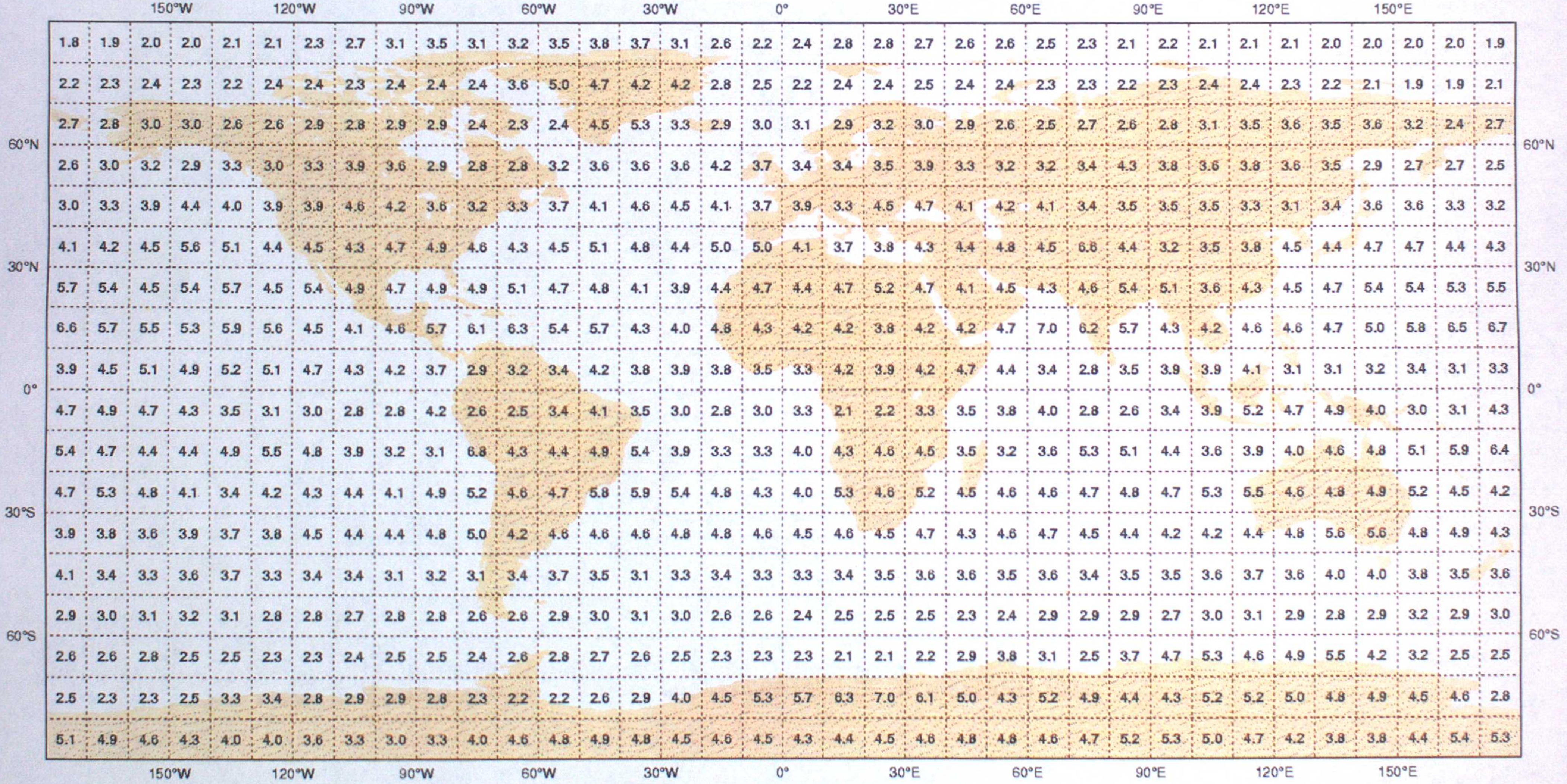
2.5	2.5	2.4	2.4	2.4	2.4	2.5	2.6	2.6	2.5	2.3	2.6	2.6	2.6	2.4	2.5	2.7	2.6	3.1	3.3	3.5	3.6	3.6	3.5	3.3	3.1	2.9	2.7	2.6	2.5	2.6	2.7	2.7	2.8	2.8	2.6
2.7	2.9	2.8	2.6	2.4	2.5	2.6	2.6	2.6	2.6	2.6	3.2	3.9	3.7	3.7	3.9	3.9	4.0	3.9	4.2	4.2	4.2	4.1	3.9	3.8	3.5	3.2	3.0	2.9	2.8	2.6	2.6	2.4	2.3	2.4	2.5
3.2	3.2	3.5	3.5	3.3	3.0	3.3	3.2	3.2	3.4	3.1	3.4	3.7	4.8	5.5	5.1	5.1	4.7	4.7	5.0	5.3	5.1	4.8	4.3	4.0	4.1	4.1	4.0	4.2	4.4	3.8	3.4	3.1	2.9	2.5	3.1
3.2	3.1	3.8	3.6	3.9	3.7	4.1	4.6	4.4	3.9	3.6	3.4	3.8	4.1	3.8	4.0	4.2	4.0	3.9	4.4	4.8	5.1	5.1	4.3	4.3	4.0	3.9	3.6	3.7	4.2	4.1	3.9	3.5	3.3	3.2	3.1
4.0	4.0	3.9	3.7	3.9	4.0	3.9	4.3	4.5	4.5	4.3	4.2	4.0	4.2	4.0	3.7	3.6	3.4	3.8	4.3	4.6	4.7	4.2	3.9	3.7	3.5	3.5	3.6	3.7	3.5	3.7	4.1	4.0	4.2	4.0	3.8
4.3	4.2	3.8	3.7	3.7	3.6	4.1	4.0	3.9	4.0	4.4	4.2	3.9	3.9	3.7	3.5	3.4	3.6	3.6	3.6	4.4	4.4	4.0	3.4	3.6	5.7	4.0	3.4	3.9	3.8	4.0	4.0	4.5	4.5	4.1	4.0
3.8	3.6	3.7	3.6	3.7	3.5	3.9	3.9	3.6	3.6	3.8	3.9	3.7	3.8	3.5	3.5	3.4	3.8	3.8	3.7	4.0	4.0	3.7	3.8	3.8	3.6	5.0	4.9	4.0	3.9	3.7	3.6	3.5	3.7	3.6	3.7
3.5	3.3	3.5	3.4	3.3	3.5	3.4	3.5	3.5	3.4	3.4	3.4	3.4	3.5	3.4	3.5	3.4	3.6	3.4	3.5	3.7	3.4	3.5	3.3	3.4	3.3	3.5	3.4	3.3	3.4	3.3	3.4	3.4	3.5	3.4	3.4
3.5	3.3	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.3	3.5	3.2	3.4	3.3	3.2	3.4	3.3	3.4	3.3	3.3	3.4	3.3	3.4	3.3	3.4	3.4	3.4	3.4	3.3
3.5	3.3	3.4	3.4	3.3	3.3	3.2	3.3	3.2	3.2	3.4	3.3	3.5	3.4	3.4	3.3	3.2	3.4	3.2	3.5	3.2	3.3	3.4	3.3	3.4	3.3	3.3	3.4	3.3	3.4	3.4	3.4	3.3	3.4	3.5	3.3
3.5	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.2	3.2	3.3	3.5	3.6	3.3	3.4	3.3	3.3	3.3	3.0	3.6	3.4	3.4	3.4	3.3	3.3	3.3	3.3	3.4	3.3	3.4	3.5	3.6	3.5	3.3	3.5	3.3
3.8	3.9	3.6	3.6	3.5	3.5	3.4	3.4	3.4	3.4	3.4	4.2	3.8	3.5	3.5	3.4	3.4	3.3	3.2	3.6	3.7	3.5	3.6	3.5	3.5	3.6	3.5	3.5	3.4	3.6	4.1	4.0	3.9	3.6	3.5	3.6
3.2	3.6	3.6	3.5	3.4	3.3	3.4	3.4	3.5	3.4	3.7	4.1	3.8	3.8	3.8	3.7	3.6	3.6	3.8	3.8	3.7	3.7	3.9	3.9	3.8	3.6	3.6	3.6	3.6	3.6	3.7	3.9	3.9	3.9	3.5	3.4
3.1	3.2	3.3	3.1	3.2	3.0	3.1	3.2	3.2	3.3	3.4	3.7	3.5	3.3	3.1	3.3	3.3	3.4	3.6	3.8	4.1	3.9	3.9	4.0	3.9	3.7	3.5	3.4	3.3	3.1	3.2	3.4	3.3	3.4	3.3	3.3
3.0	3.2	3.4	3.6	3.4	3.4	3.1	3.0	2.9	2.8	2.9	3.2	3.1	2.9	3.0	3.1	2.7	2.7	2.7	2.7	2.7	2.8	2.8	2.8	3.0	3.2	2.9	2.6	2.7	2.9	2.8	3.0	3.0	2.8	2.9	3.1
3.4	3.7	3.8	3.8	3.5	3.1	2.8	2.7	2.7	2.7	2.7	3.0	3.0	3.1	3.2	3.1	3.0	2.6	2.5	2.5	2.5	2.6	2.9	3.2	3.0	2.9	3.3	3.6	3.7	3.6	3.9	4.1	3.6	3.3	3.4	3.6
3.3	3.1	3.1	3.1	3.2	3.1	2.8	2.7	2.8	2.9	2.7	2.7	2.8	2.8	2.9	3.2	3.2	3.1	3.0	3.3	3.5	3.2	2.8	2.6	3.1	3.0	2.7	2.5	3.2	3.4	3.5	3.5	3.6	3.6	3.7	3.4
3.4	3.3	3.2	3.1	3.1	3.1	2.9	2.7	2.6	2.7	2.9	3.0	3.1	3.1	3.1	3.0	3.0	2.9	2.9	3.0	3.1	3.2	3.2	3.1	3.0	3.1	3.4	3.5	3.5	3.4	3.2	3.1	3.0	3.2	3.5	3.5

Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



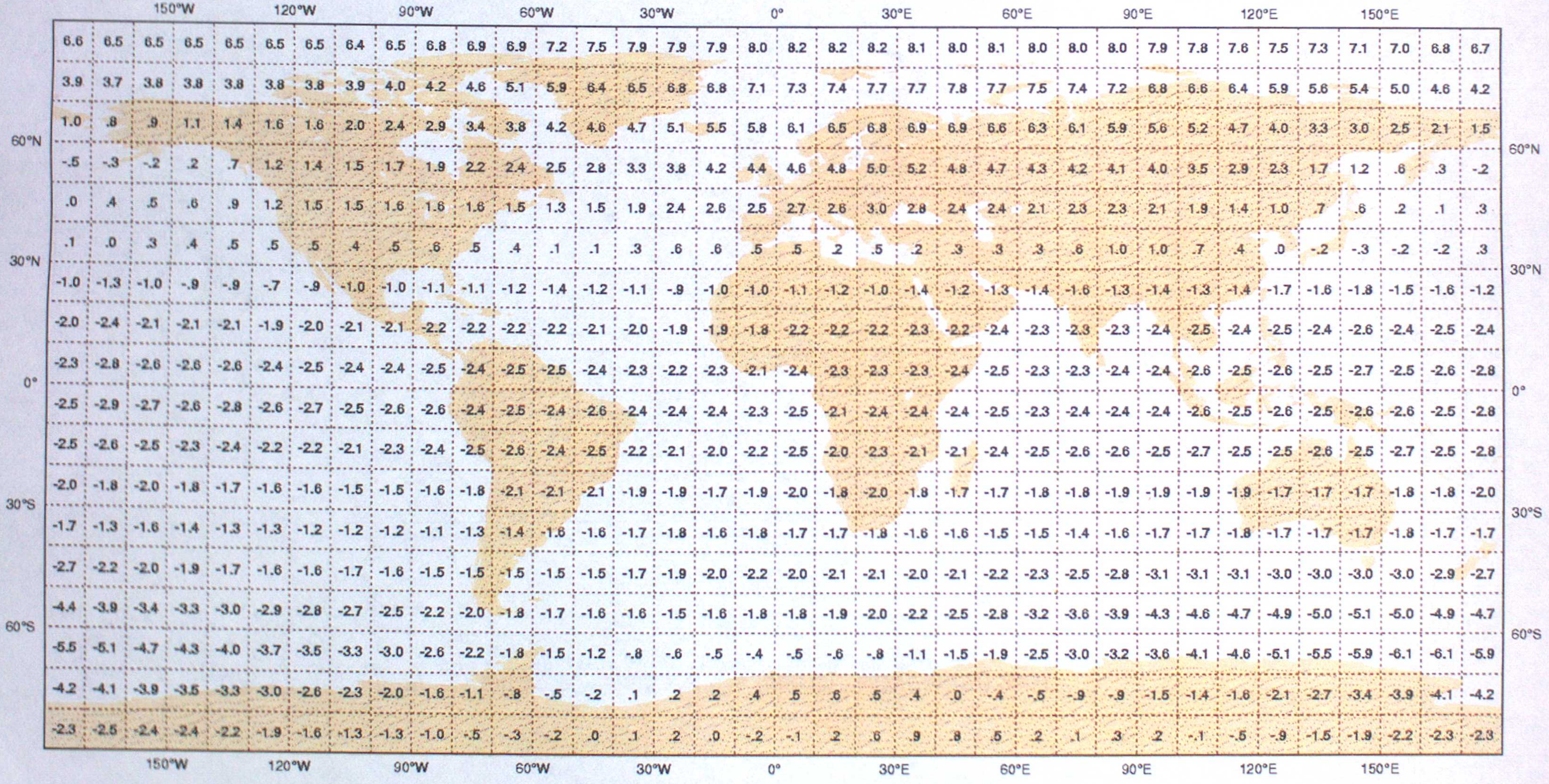
8.4	8.2	8.4	8.6	8.8	9.1	9.1	9.1	9.1	9.9	10.6	10.1	10.7	11.3	11.9	10.5	9.3	9.3	8.8	8.2	8.2	8.4	8.5	8.6	8.9	9.1	9.3	9.3	9.2	9.0	8.9	8.7	8.5	8.4	8.2	8.3
6.4	6.0	6.6	7.0	7.7	8.0	8.5	8.5	8.6	9.0	7.8	7.6	9.9	14.4	14.9	10.2	5.6	4.7	3.9	4.4	4.6	4.6	5.0	5.6	6.2	6.7	7.3	7.9	8.6	8.6	8.4	8.0	7.7	7.2	6.8	6.7
4.2	3.8	4.8	5.3	5.3	5.3	5.6	6.8	7.0	6.0	5.3	5.0	3.9	6.5	4.0	2.6	2.2	1.7	2.0	2.9	3.0	3.7	4.1	4.4	4.6	4.6	5.1	6.4	6.9	7.7	8.7	10.0	10.6	8.7	7.6	6.0
2.1	1.7	1.3	1.1	1.2	2.0	1.6	2.0	2.9	3.3	3.7	3.1	1.2	.5	-.3	-1.2	-1.3	-.9	-.2	.5	1.2	1.9	2.3	2.3	1.9	1.8	2.1	3.6	4.0	5.6	5.9	5.9	3.7	3.3	2.7	2.4
-.1	-.1	-.7	-1.7	-1.8	-1.6	-.8	-1.4	-1.3	-.4	.1	-.6	-1.3	-2.3	-3.7	-5.1	-5.0	-4.6	-2.6	-.9	-.6	-1.3	-.5	-1.5	-2.0	-.3	.9	1.7	1.9	1.8	1.3	.6	-.3	-.4	-.2	-.2
-4.1	-4.4	-4.0	-5.8	-6.4	-6.1	-4.7	-3.1	-4.0	-4.4	-4.5	-4.8	-5.6	-5.9	-5.4	-6.4	-6.3	-5.0	-4.4	-4.5	-3.9	-4.4	-3.8	-4.5	-4.8	-1.4	2.5	3.0	-1.0	-3.2	-5.0	-5.5	-5.5	-5.6	-5.5	-4.3
-9.5	-8.7	-7.0	-8.4	-10.5	-10.1	-9.2	-8.4	-8.6	-10.3	-11.9	-10.5	-8.7	-6.6	-4.5	-5.0	-6.2	-6.5	-7.7	-8.5	-9.9	-11.4	-7.5	-10.0	-11.9	-11.1	-8.6	-7.3	-6.1	-6.1	-7.2	-7.7	-10.0	-11.4	-12.6	-11.3
-9.3	-9.5	-8.2	-8.9	-9.4	-7.4	-5.9	-8.0	-9.5	-9.2	-9.5	-7.5	-5.4	-7.1	-6.0	-5.9	-6.7	-8.7	-11.7	-13.6	-13.9	-11.7	-11.7	-11.3	-8.9	-8.2	-9.2	-9.4	-9.9	-9.3	-6.7	-6.3	-6.9	-7.4	-8.3	-9.2
-4.1	-6.0	-7.2	-8.0	-8.4	-8.6	-9.5	-9.2	-8.8	-5.1	-3.1	-4.2	-5.8	-6.0	-4.6	-4.8	-6.2	-5.9	-4.1	-5.5	-4.5	-5.1	-6.6	-5.6	-3.0	-2.1	-3.4	-4.0	-4.6	-5.6	-5.5	-4.2	-4.3	-4.0	-3.8	-3.8
-7.3	-10.4	-12.1	-13.8	-15.7	-16.5	-16.5	-15.9	-14.3	-9.7	-2.0	-2.3	-4.4	-9.0	-11.9	-11.2	-11.4	-9.5	-5.3	-1.2	-1.8	-5.3	-7.4	-6.0	-4.3	-2.0	-2.0	-2.9	-4.5	-6.0	-6.7	-5.7	-4.0	-2.8	-3.0	-5.1
-5.6	-5.7	-6.3	-6.5	-8.0	-10.7	-13.6	-14.3	-15.0	-15.2	-10.2	-4.7	-5.7	-7.6	-9.9	-10.7	-12.4	-12.9	-10.6	-4.3	-5.6	-5.9	-6.7	-9.1	-11.0	-6.8	-6.6	-9.5	-10.7	-10.1	-9.0	-9.7	-9.9	-8.9	-7.2	-7.0
-9.1	-6.3	-5.0	-3.9	-3.0	-3.4	-3.8	-4.8	-6.5	-9.9	-12.4	-9.3	-7.8	-6.9	-7.4	-7.4	-8.8	-10.8	-12.1	-9.2	-6.7	-9.0	-10.4	-10.5	-10.6	-10.1	-9.8	-10.0	-10.8	-8.7	-5.8	-7.1	-8.7	-9.5	-10.4	-9.9
-4.7	-4.6	-5.1	-4.1	-3.4	-3.7	-4.1	-4.0	-3.8	-4.3	-5.4	-4.2	-4.8	-4.1	-4.0	-4.3	-4.1	-5.0	-5.7	-7.0	-7.3	-6.5	-5.8	-6.1	-6.2	-5.7	-5.2	-4.8	-5.3	-5.9	-5.8	-6.5	-6.7	-6.1	-5.5	-4.9
-3.0	-2.7	-3.1	-2.5	-2.4	-2.2	-2.0	-1.8	-1.4	-1.4	-1.4	-1.8	-2.3	-2.1	-1.8	-1.1	-1.0	-1.2	-.9	-1.1	-1.2	-1.2	-1.3	-1.2	-1.6	-.9	-.7	-.8	-.9	-1.6	-1.9	-2.3	-2.2	-2.2	-1.5	-2.2
.0	-.2	-.1	-.1	.2	.5	.9	.9	1.0	.8	.7	.7	.3	.3	.7	1.7	1.9	2.4	2.8	2.6	2.8	2.6	2.4	2.4	2.1	1.9	1.6	1.4	1.0	.9	.7	.6	.1	-.1	.0	.1
2.4	2.5	2.6	2.8	2.7	2.9	2.9	2.8	2.8	2.8	3.0	3.1	2.5	2.7	2.8	3.2	3.5	4.0	4.0	4.2	4.3	4.7	5.5	6.2	5.2	4.2	5.0	5.6	5.2	4.6	5.0	5.4	3.6	3.0	2.8	2.7
3.8	3.8	4.0	4.5	5.6	6.1	5.9	5.6	6.5	6.6	5.8	6.2	5.0	4.9	4.7	6.1	8.5	12.3	14.9	16.4	16.3	17.1	17.5	17.0	12.8	12.9	17.2	19.3	19.8	19.6	19.4	17.9	15.2	12.4	6.7	4.0
7.2	6.3	6.1	6.8	7.6	8.7	10.0	11.7	12.9	11.7	10.1	9.4	9.7	10.5	11.9	13.8	14.9	15.8	16.6	17.3	18.3	19.7	21.0	21.3	21.3	21.7	22.0	21.8	20.9	19.8	18.4	16.6	14.6	12.2	8.8	7.7

Figure 31. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



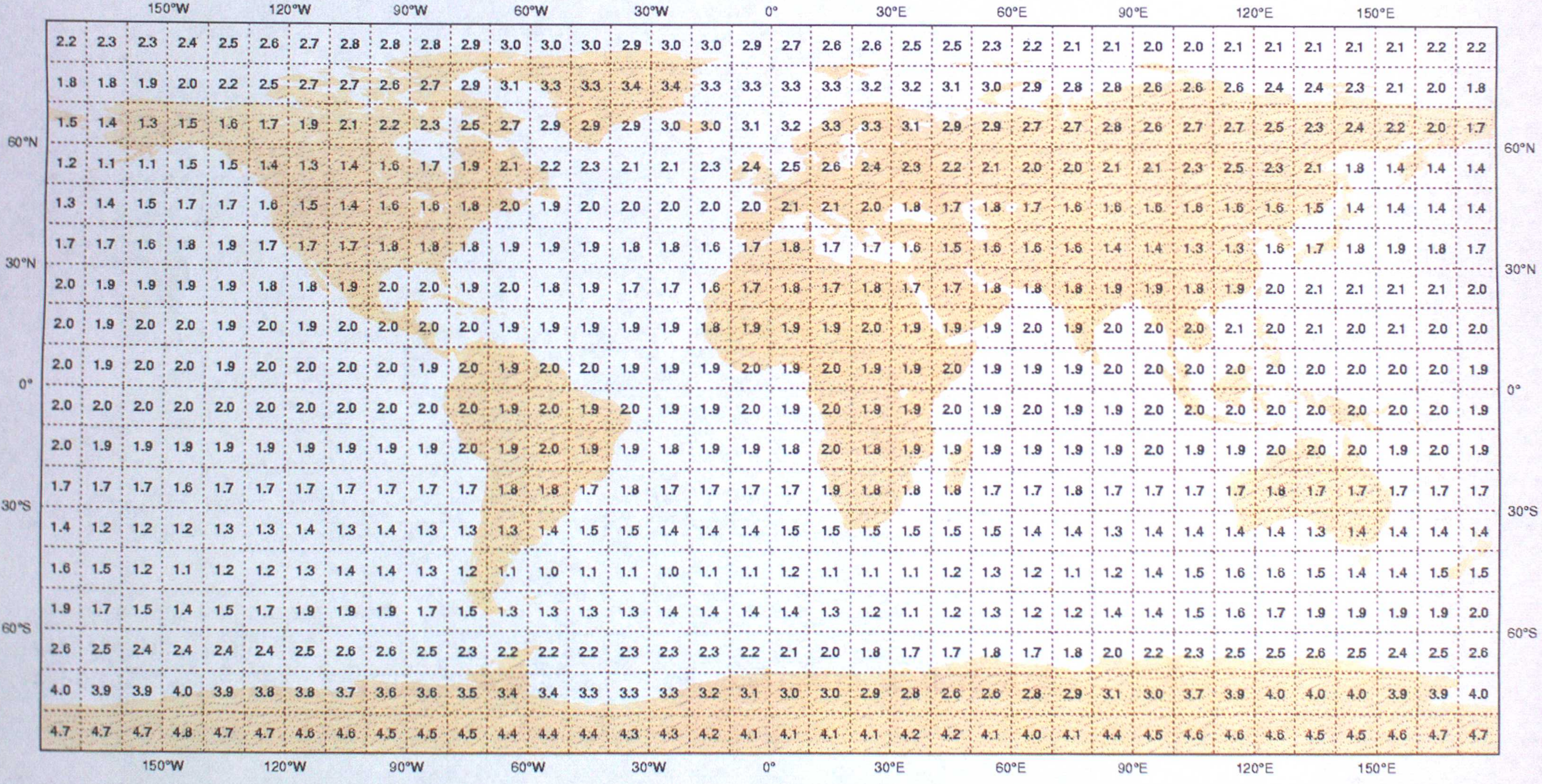
1.8	1.9	2.0	2.0	2.1	2.1	2.3	2.7	3.1	3.5	3.1	3.2	3.5	3.8	3.7	3.1	2.6	2.2	2.4	2.8	2.8	2.7	2.6	2.6	2.5	2.3	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.9
2.2	2.3	2.4	2.3	2.2	2.4	2.4	2.3	2.4	2.4	2.4	3.6	5.0	4.7	4.2	4.2	2.8	2.5	2.2	2.4	2.4	2.5	2.4	2.4	2.3	2.3	2.2	2.3	2.4	2.4	2.3	2.2	2.1	1.9	1.9	2.1
2.7	2.8	3.0	3.0	2.6	2.6	2.9	2.8	2.9	2.9	2.4	2.3	2.4	4.5	5.3	3.3	2.9	3.0	3.1	2.9	3.2	3.0	2.9	2.6	2.5	2.7	2.6	2.8	3.1	3.5	3.6	3.5	3.6	3.2	2.4	2.7
2.6	3.0	3.2	2.9	3.3	3.0	3.3	3.9	3.6	2.9	2.8	2.8	3.2	3.6	3.6	3.6	4.2	3.7	3.4	3.4	3.5	3.9	3.3	3.2	3.2	3.4	4.3	3.8	3.6	3.8	3.6	3.5	2.9	2.7	2.7	2.5
3.0	3.3	3.9	4.4	4.0	3.9	3.9	4.6	4.2	3.6	3.2	3.3	3.7	4.1	4.6	4.5	4.1	3.7	3.9	3.3	4.5	4.7	4.1	4.2	4.1	3.4	3.5	3.5	3.5	3.3	3.1	3.4	3.6	3.6	3.3	3.2
4.1	4.2	4.5	5.6	5.1	4.4	4.5	4.3	4.7	4.9	4.6	4.3	4.5	5.1	4.8	4.4	5.0	5.0	4.1	3.7	3.8	4.3	4.4	4.8	4.5	6.6	4.4	3.2	3.5	3.8	4.5	4.4	4.7	4.7	4.4	4.3
5.7	5.4	4.5	5.4	5.7	4.5	5.4	4.9	4.7	4.9	4.9	5.1	4.7	4.8	4.1	3.9	4.4	4.7	4.4	4.7	5.2	4.7	4.1	4.5	4.3	4.6	5.4	5.1	3.6	4.3	4.5	4.7	5.4	5.4	5.3	5.5
6.6	5.7	5.5	5.3	5.9	5.6	4.5	4.1	4.6	5.7	6.1	6.3	5.4	5.7	4.3	4.0	4.8	4.3	4.2	4.2	3.8	4.2	4.2	4.7	7.0	6.2	5.7	4.3	4.2	4.6	4.6	4.7	5.0	5.8	6.5	6.7
3.9	4.5	5.1	4.9	5.2	5.1	4.7	4.3	4.2	3.7	2.9	3.2	3.4	4.2	3.8	3.9	3.8	3.5	3.3	4.2	3.9	4.2	4.7	4.4	3.4	2.8	3.5	3.9	3.9	4.1	3.1	3.1	3.2	3.4	3.1	3.3
4.7	4.9	4.7	4.3	3.5	3.1	3.0	2.8	2.8	4.2	2.6	2.5	3.4	4.1	3.5	3.0	2.8	3.0	3.3	2.1	2.2	3.3	3.5	3.8	4.0	2.8	2.6	3.4	3.9	5.2	4.7	4.9	4.0	3.0	3.1	4.3
5.4	4.7	4.4	4.4	4.9	5.5	4.8	3.9	3.2	3.1	6.8	4.3	4.4	4.9	5.4	3.9	3.3	3.3	4.0	4.3	4.6	4.5	3.5	3.2	3.6	5.3	5.1	4.4	3.6	3.9	4.0	4.6	4.8	5.1	5.9	6.4
4.7	5.3	4.8	4.1	3.4	4.2	4.3	4.4	4.1	4.9	5.2	4.6	4.7	5.8	5.9	5.4	4.8	4.3	4.0	5.3	4.6	5.2	4.5	4.6	4.6	4.7	4.8	4.7	5.3	5.5	4.6	4.8	4.9	5.2	4.5	4.2
3.9	3.8	3.6	3.9	3.7	3.8	4.5	4.4	4.4	4.8	5.0	4.2	4.6	4.6	4.6	4.8	4.8	4.6	4.5	4.6	4.5	4.7	4.3	4.6	4.7	4.5	4.4	4.2	4.2	4.4	4.8	5.6	5.6	4.8	4.9	4.3
4.1	3.4	3.3	3.6	3.7	3.3	3.4	3.4	3.1	3.2	3.1	3.4	3.7	3.5	3.1	3.3	3.4	3.3	3.3	3.4	3.5	3.6	3.6	3.5	3.6	3.4	3.5	3.5	3.6	3.7	3.6	4.0	4.0	3.8	3.5	3.6
2.9	3.0	3.1	3.2	3.1	2.8	2.8	2.7	2.8	2.8	2.6	2.6	2.9	3.0	3.1	3.0	2.6	2.6	2.4	2.5	2.5	2.5	2.3	2.4	2.9	2.9	2.9	2.7	3.0	3.1	2.9	2.8	2.9	3.2	2.9	3.0
2.6	2.6	2.8	2.5	2.5	2.3	2.3	2.4	2.5	2.5	2.4	2.6	2.8	2.7	2.6	2.5	2.3	2.3	2.3	2.1	2.1	2.2	2.9	3.8	3.1	2.5	3.7	4.7	5.3	4.6	4.9	5.5	4.2	3.2	2.5	2.5
2.5	2.3	2.3	2.5	3.3	3.4	2.8	2.9	2.9	2.8	2.3	2.2	2.2	2.6	2.9	4.0	4.5	5.3	5.7	6.3	7.0	6.1	5.0	4.3	5.2	4.9	4.4	4.3	5.2	5.2	5.0	4.8	4.9	4.5	4.6	2.8
5.1	4.9	4.6	4.3	4.0	4.0	3.6	3.3	3.0	3.3	4.0	4.6	4.8	4.9	4.8	4.5	4.6	4.5	4.3	4.4	4.5	4.6	4.8	4.8	4.6	4.7	5.2	5.3	5.0	4.7	4.2	3.8	3.8	4.4	5.4	5.3

Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



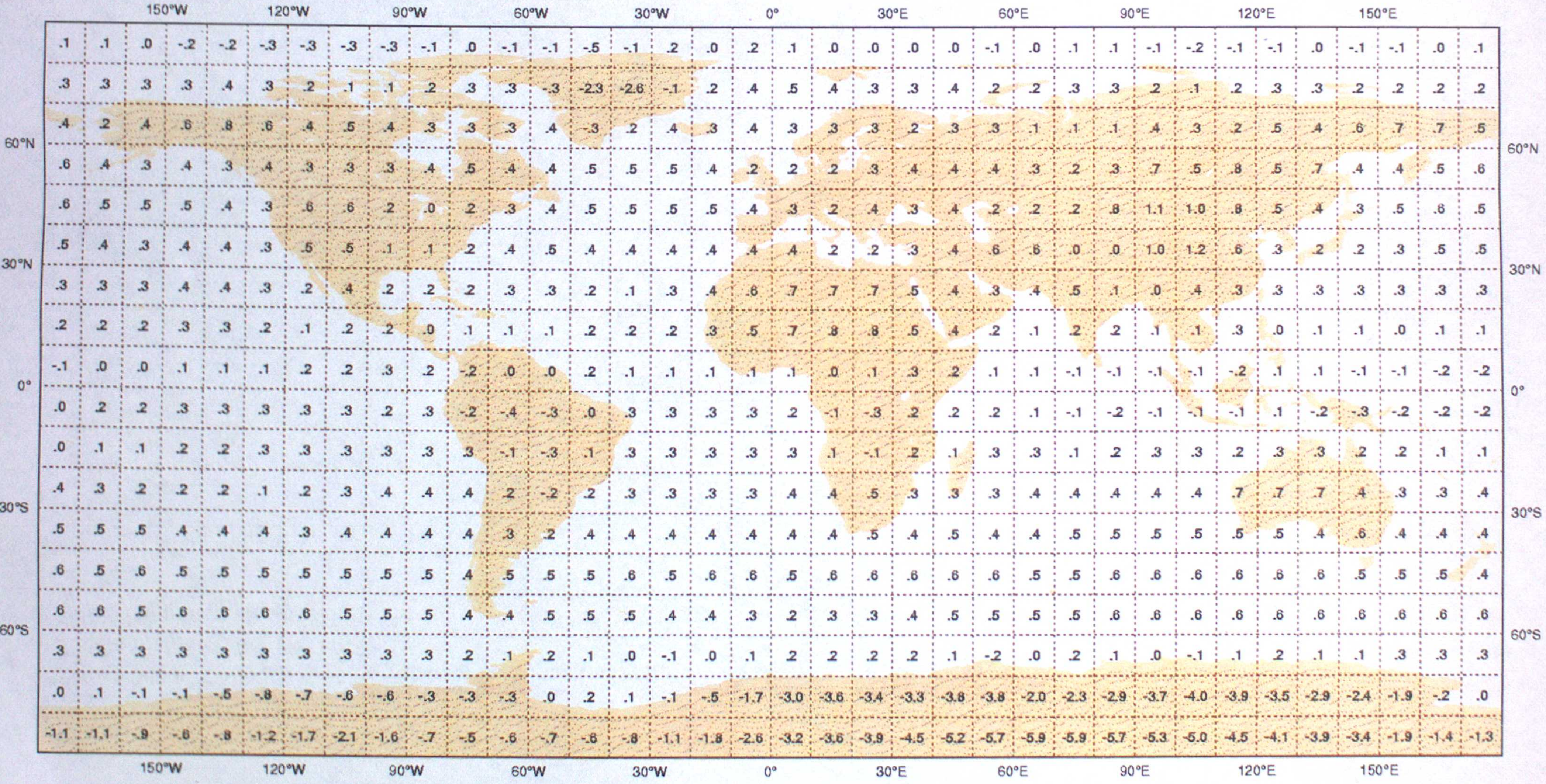
6.6	6.5	6.5	6.5	6.5	6.5	6.5	6.4	6.5	6.8	6.9	6.9	7.2	7.5	7.9	7.9	7.9	8.0	8.2	8.2	8.2	8.1	8.0	8.1	8.0	8.0	8.0	7.9	7.8	7.6	7.5	7.3	7.1	7.0	6.8	6.7
3.9	3.7	3.8	3.8	3.8	3.8	3.8	3.9	4.0	4.2	4.6	5.1	5.9	6.4	6.5	6.8	6.8	7.1	7.3	7.4	7.7	7.7	7.8	7.7	7.5	7.4	7.2	6.8	6.6	6.4	5.9	5.6	5.4	5.0	4.6	4.2
1.0	.8	.9	1.1	1.4	1.6	1.6	2.0	2.4	2.9	3.4	3.8	4.2	4.6	4.7	5.1	5.5	5.8	6.1	6.5	6.8	6.9	6.9	6.6	6.3	6.1	5.9	5.6	5.2	4.7	4.0	3.3	3.0	2.5	2.1	1.5
-.5	-.3	-.2	.2	.7	1.2	1.4	1.5	1.7	1.9	2.2	2.4	2.5	2.8	3.3	3.8	4.2	4.4	4.6	4.8	5.0	5.2	4.8	4.7	4.3	4.2	4.1	4.0	3.5	2.9	2.3	1.7	1.2	.6	.3	-.2
.0	.4	.5	.6	.9	1.2	1.5	1.5	1.6	1.6	1.6	1.5	1.3	1.5	1.9	2.4	2.6	2.5	2.7	2.6	3.0	2.8	2.4	2.4	2.1	2.3	2.3	2.1	1.9	1.4	1.0	.7	.6	.2	.1	.3
.1	.0	.3	.4	.5	.5	.5	.4	.5	.6	.5	.4	.1	.1	.3	.6	.6	.5	.5	.2	.5	.2	.3	.3	.3	.6	1.0	1.0	.7	.4	.0	-.2	-.3	-.2	-.2	.3
-1.0	-1.3	-1.0	-.9	-.9	-.7	-.9	-1.0	-1.0	-1.1	-1.1	-1.2	-1.4	-1.2	-1.1	-.9	-1.0	-1.0	-1.1	-1.2	-1.0	-1.4	-1.2	-1.3	-1.4	-1.6	-1.3	-1.4	-1.3	-1.4	-1.7	-1.6	-1.8	-1.5	-1.6	-1.2
-2.0	-2.4	-2.1	-2.1	-2.1	-1.9	-2.0	-2.1	-2.1	-2.2	-2.2	-2.2	-2.2	-2.1	-2.0	-1.9	-1.9	-1.8	-2.2	-2.2	-2.2	-2.3	-2.2	-2.4	-2.3	-2.3	-2.3	-2.4	-2.5	-2.4	-2.5	-2.4	-2.6	-2.4	-2.5	-2.4
-2.3	-2.8	-2.6	-2.6	-2.6	-2.4	-2.5	-2.4	-2.4	-2.5	-2.4	-2.5	-2.5	-2.4	-2.3	-2.2	-2.3	-2.1	-2.4	-2.3	-2.3	-2.3	-2.4	-2.5	-2.3	-2.3	-2.4	-2.4	-2.6	-2.5	-2.6	-2.5	-2.7	-2.5	-2.6	-2.8
-2.5	-2.9	-2.7	-2.6	-2.8	-2.6	-2.7	-2.5	-2.6	-2.6	-2.4	-2.5	-2.4	-2.6	-2.4	-2.4	-2.4	-2.3	-2.5	-2.1	-2.4	-2.4	-2.4	-2.5	-2.3	-2.4	-2.4	-2.4	-2.6	-2.5	-2.6	-2.5	-2.6	-2.6	-2.5	-2.8
-2.5	-2.6	-2.5	-2.3	-2.4	-2.2	-2.2	-2.1	-2.3	-2.4	-2.5	-2.6	-2.4	-2.5	-2.2	-2.1	-2.0	-2.2	-2.5	-2.0	-2.3	-2.1	-2.1	-2.4	-2.5	-2.6	-2.6	-2.5	-2.7	-2.5	-2.5	-2.6	-2.5	-2.7	-2.5	-2.8
-2.0	-1.8	-2.0	-1.8	-1.7	-1.6	-1.6	-1.5	-1.5	-1.6	-1.8	-2.1	-2.1	-2.1	-1.9	-1.9	-1.7	-1.9	-2.0	-1.8	-2.0	-1.8	-1.7	-1.7	-1.8	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.8	-1.8	-2.0
-1.7	-1.3	-1.6	-1.4	-1.3	-1.3	-1.2	-1.2	-1.2	-1.1	-1.3	-1.4	-1.6	-1.6	-1.7	-1.8	-1.6	-1.8	-1.7	-1.7	-1.8	-1.6	-1.6	-1.5	-1.5	-1.4	-1.6	-1.7	-1.7	-1.8	-1.7	-1.7	-1.7	-1.8	-1.7	-1.7
-2.7	-2.2	-2.0	-1.9	-1.7	-1.6	-1.6	-1.7	-1.6	-1.5	-1.5	-1.5	-1.5	-1.5	-1.7	-1.9	-2.0	-2.2	-2.0	-2.1	-2.1	-2.0	-2.1	-2.2	-2.3	-2.5	-2.8	-3.1	-3.1	-3.1	-3.0	-3.0	-3.0	-3.0	-2.9	-2.7
-4.4	-3.9	-3.4	-3.3	-3.0	-2.9	-2.8	-2.7	-2.5	-2.2	-2.0	-1.8	-1.7	-1.6	-1.6	-1.5	-1.6	-1.8	-1.8	-1.9	-2.0	-2.2	-2.5	-2.8	-3.2	-3.6	-3.9	-4.3	-4.6	-4.7	-4.9	-5.0	-5.1	-5.0	-4.9	-4.7
-5.5	-5.1	-4.7	-4.3	-4.0	-3.7	-3.5	-3.3	-3.0	-2.6	-2.2	-1.8	-1.5	-1.2	-.8	-.6	-.5	-.4	-.5	-.6	-.8	-1.1	-1.5	-1.9	-2.5	-3.0	-3.2	-3.6	-4.1	-4.6	-5.1	-5.5	-5.9	-6.1	-6.1	-5.9
-4.2	-4.1	-3.9	-3.5	-3.3	-3.0	-2.6	-2.3	-2.0	-1.6	-1.1	-.8	-.5	-.2	.1	.2	.2	.4	.5	.6	.5	.4	.0	-.4	-.5	-.9	-.9	-1.5	-1.4	-1.6	-2.1	-2.7	-3.4	-3.9	-4.1	-4.2
-2.3	-2.5	-2.4	-2.4	-2.2	-1.9	-1.6	-1.3	-1.3	-1.0	-.5	-.3	-.2	.0	.1	.2	.0	-.2	-.1	.2	.6	.9	.8	.5	.2	.1	.3	.2	-.1	-.5	-.9	-1.5	-1.9	-2.2	-2.3	-2.3

Figure 33. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



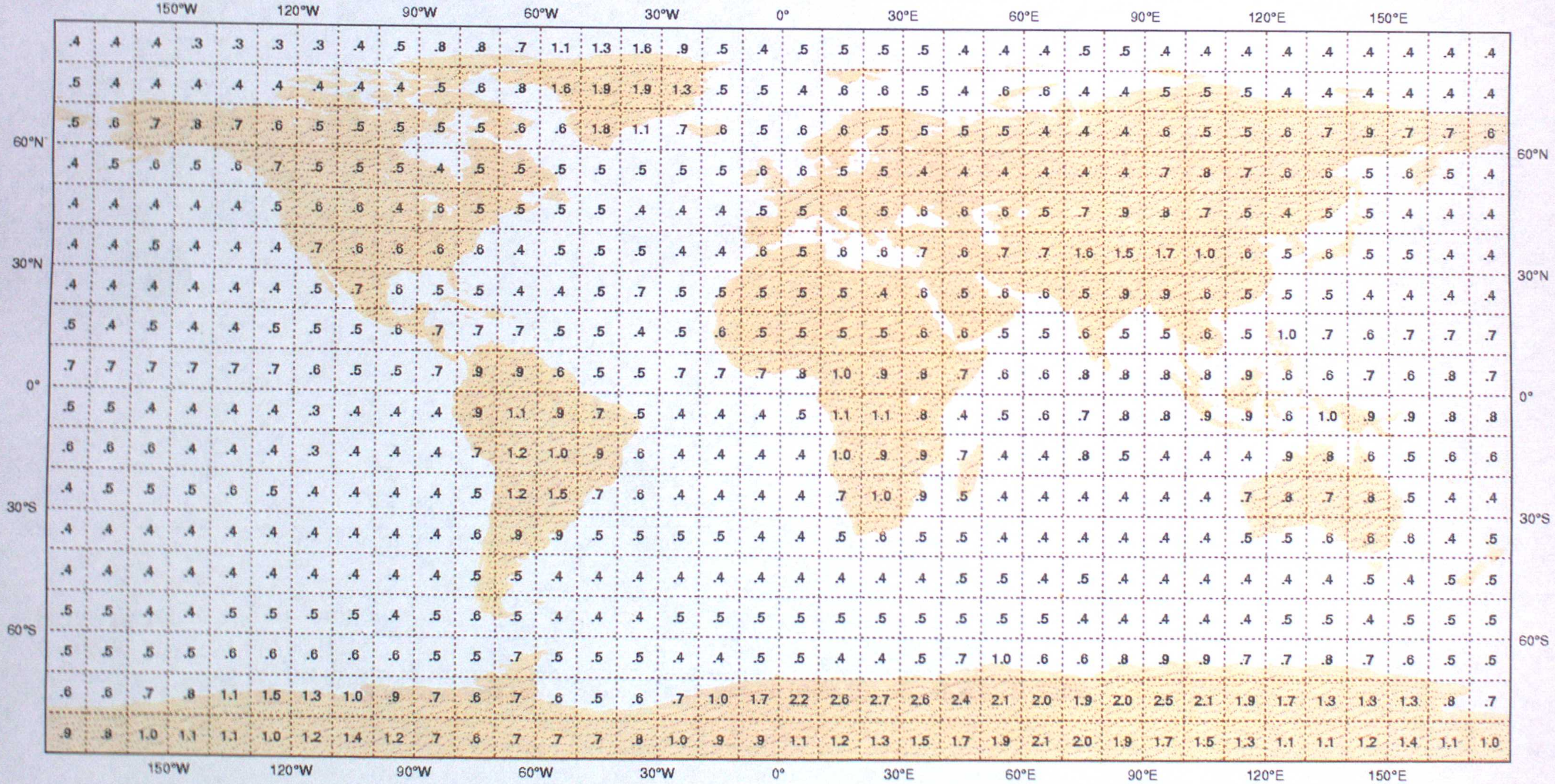
2.2	2.3	2.3	2.4	2.5	2.6	2.7	2.8	2.8	2.8	2.9	3.0	3.0	3.0	2.9	3.0	3.0	2.9	2.7	2.6	2.6	2.5	2.5	2.3	2.2	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.2
1.8	1.8	1.9	2.0	2.2	2.5	2.7	2.7	2.6	2.7	2.9	3.1	3.3	3.3	3.4	3.4	3.3	3.3	3.3	3.3	3.2	3.2	3.1	3.0	2.9	2.8	2.8	2.6	2.6	2.6	2.4	2.4	2.3	2.1	2.0	1.8
1.5	1.4	1.3	1.5	1.6	1.7	1.9	2.1	2.2	2.3	2.5	2.7	2.9	2.9	2.9	3.0	3.0	3.1	3.2	3.3	3.3	3.1	2.9	2.9	2.7	2.7	2.8	2.6	2.7	2.7	2.5	2.3	2.4	2.2	2.0	1.7
1.2	1.1	1.1	1.5	1.5	1.4	1.3	1.4	1.6	1.7	1.9	2.1	2.2	2.3	2.1	2.1	2.3	2.4	2.5	2.6	2.4	2.3	2.2	2.1	2.0	2.0	2.1	2.1	2.3	2.5	2.3	2.1	1.8	1.4	1.4	1.4
1.3	1.4	1.5	1.7	1.7	1.6	1.5	1.4	1.6	1.6	1.8	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	1.8	1.7	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.4	1.4	1.4	1.4
1.7	1.7	1.6	1.8	1.9	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9	1.8	1.8	1.6	1.7	1.8	1.7	1.7	1.6	1.5	1.6	1.6	1.6	1.4	1.4	1.3	1.3	1.6	1.7	1.8	1.9	1.8	1.7
2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.9	2.0	2.0	1.9	2.0	1.8	1.9	1.7	1.7	1.6	1.7	1.8	1.7	1.8	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.8	1.9	2.0	2.1	2.1	2.1	2.1	2.0
2.0	1.9	2.0	2.0	1.9	2.0	1.9	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.8	1.9	1.9	1.9	2.0	1.9	1.9	1.9	2.0	1.9	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.1	2.0	2.0
2.0	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.0	1.9	2.0	1.9	2.0	2.0	1.9	1.9	1.9	2.0	1.9	2.0	1.9	1.9	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9
2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	2.0	1.9	1.9	2.0	1.9	2.0	1.9	1.9	2.0	1.9	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9
2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0	1.9	1.9	1.8	1.9	1.9	1.8	2.0	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	2.0	2.0	2.0	1.9	2.0	1.9
1.7	1.7	1.7	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.7	1.8	1.7	1.7	1.7	1.7	1.9	1.8	1.8	1.8	1.7	1.7	1.8	1.7	1.7	1.7	1.7	1.8	1.7	1.7	1.7	1.7	1.7
1.4	1.2	1.2	1.2	1.3	1.3	1.4	1.3	1.4	1.3	1.3	1.3	1.4	1.5	1.5	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.4	1.4	1.4	1.4	1.3	1.4	1.4	1.4	1.4
1.6	1.5	1.2	1.1	1.2	1.2	1.3	1.4	1.4	1.3	1.2	1.1	1.0	1.1	1.1	1.0	1.1	1.1	1.2	1.1	1.1	1.1	1.2	1.3	1.2	1.1	1.2	1.4	1.5	1.6	1.6	1.5	1.4	1.4	1.5	1.5
1.9	1.7	1.5	1.4	1.5	1.7	1.9	1.9	1.9	1.7	1.5	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.3	1.2	1.1	1.2	1.3	1.2	1.2	1.4	1.4	1.5	1.6	1.7	1.9	1.9	1.9	1.9	2.0
2.6	2.5	2.4	2.4	2.4	2.4	2.5	2.6	2.6	2.5	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.2	2.1	2.0	1.8	1.7	1.7	1.8	1.7	1.8	2.0	2.2	2.3	2.5	2.5	2.6	2.5	2.4	2.5	2.6
4.0	3.9	3.9	4.0	3.9	3.8	3.8	3.7	3.6	3.6	3.5	3.4	3.4	3.3	3.3	3.3	3.2	3.1	3.0	3.0	2.9	2.8	2.6	2.6	2.8	2.9	3.1	3.0	3.7	3.9	4.0	4.0	4.0	3.9	3.9	4.0
4.7	4.7	4.7	4.8	4.7	4.7	4.6	4.6	4.5	4.5	4.5	4.4	4.4	4.4	4.3	4.3	4.2	4.1	4.1	4.1	4.1	4.2	4.2	4.1	4.0	4.1	4.4	4.5	4.6	4.6	4.6	4.5	4.5	4.6	4.7	4.7

Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



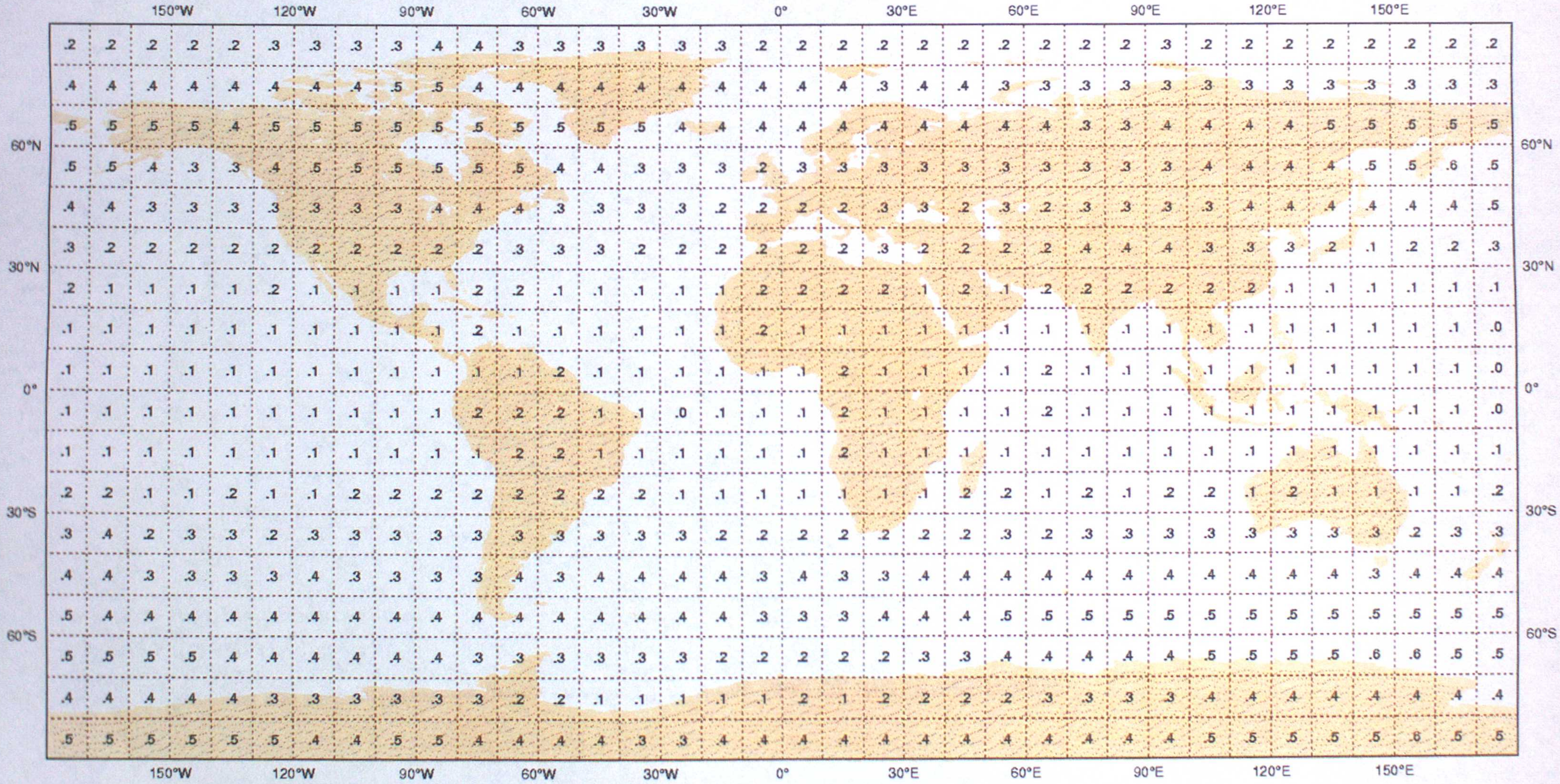
.1	.1	.0	-.2	-.2	-.3	-.3	-.3	-.3	-.1	.0	-.1	-.1	-.5	-.1	.2	.0	.2	.1	.0	.0	.0	.0	-.1	.0	.1	.1	-.1	-.2	-.1	-.1	.0	-.1	-.1	.0	.1
.3	.3	.3	.3	.4	.3	.2	.1	.1	.2	.3	.3	-.3	-2.3	-2.6	-.1	.2	.4	.5	.4	.3	.3	.4	.2	.2	.3	.3	.2	.1	.2	.3	.3	.2	.2	.2	.2
.4	.2	.4	.6	.8	.6	.4	.5	.4	.3	.3	.3	.4	-.3	.2	.4	.3	.4	.3	.3	.3	.2	.3	.3	.1	.1	.1	.4	.3	.2	.5	.4	.6	.7	.7	.5
.6	.4	.3	.4	.3	.4	.3	.3	.3	.4	.5	.4	.4	.5	.5	.5	.4	.2	.2	.2	.3	.4	.4	.4	.3	.2	.3	.7	.5	.8	.5	.7	.4	.4	.5	.6
.6	.5	.5	.5	.4	.3	.6	.6	.2	.0	.2	.3	.4	.5	.5	.5	.5	.4	.3	.2	.4	.3	.4	.2	.2	.2	.8	1.1	1.0	.8	.5	.4	.3	.5	.6	.5
.5	.4	.3	.4	.4	.3	.5	.5	.1	.1	.2	.4	.5	.4	.4	.4	.4	.4	.4	.2	.2	.3	.4	.6	.6	.0	.0	1.0	1.2	.6	.3	.2	.2	.3	.5	.5
.3	.3	.3	.4	.4	.3	.2	.4	.2	.2	.2	.3	.3	.2	.1	.3	.4	.6	.7	.7	.7	.5	.4	.3	.4	.5	.1	.0	.4	.3	.3	.3	.3	.3	.3	.3
.2	.2	.2	.3	.3	.2	.1	.2	.2	.0	.1	.1	.1	.2	.2	.2	.3	.5	.7	.8	.8	.5	.4	.2	.1	.2	.2	.1	.1	.3	.0	.1	.1	.0	.1	.1
-.1	.0	.0	.1	.1	.1	.2	.2	.3	.2	-.2	.0	.0	.2	.1	.1	.1	.1	.1	.0	.1	.3	.2	.1	.1	-.1	-.1	-.1	-.1	-.2	.1	.1	-.1	-.1	-.2	-.2
.0	.2	.2	.3	.3	.3	.3	.3	.2	.3	-.2	-.4	-.3	.0	.3	.3	.3	.3	.2	-.1	-.3	.2	.2	.2	.1	-.1	-.2	-.1	-.1	-.1	.1	-.2	-.3	-.2	-.2	-.2
.0	.1	.1	.2	.2	.3	.3	.3	.3	.3	.3	-.1	-.3	.1	.3	.3	.3	.3	.3	.1	-.1	.2	.1	.3	.3	.1	.2	.3	.3	.2	.3	.3	.2	.2	.1	.1
.4	.3	.2	.2	.2	.1	.2	.3	.4	.4	.4	.2	-.2	.2	.3	.3	.3	.3	.4	.4	.5	.3	.3	.3	.4	.4	.4	.4	.4	.7	.7	.7	.4	.3	.3	.4
.5	.5	.5	.4	.4	.4	.3	.4	.4	.4	.4	.3	.2	.4	.4	.4	.4	.4	.4	.4	.5	.4	.5	.4	.4	.5	.5	.5	.5	.5	.5	.4	.6	.4	.4	.4
.6	.5	.6	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.6	.5	.6	.6	.5	.6	.6	.6	.6	.6	.5	.5	.6	.6	.6	.6	.6	.6	.5	.5	.5	.4
.6	.6	.5	.6	.6	.6	.6	.5	.5	.5	.4	.4	.5	.5	.5	.4	.4	.3	.2	.3	.3	.4	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.1	.2	.1	.0	-.1	.0	.1	.2	.2	.2	.2	.1	-.2	.0	.2	.1	.0	-.1	.1	.2	.1	.1	.3	.3	.3
.0	.1	-.1	-.1	-.5	-.8	-.7	-.6	-.6	-.3	-.3	-.3	.0	.2	.1	-.1	-.5	-1.7	-3.0	-3.6	-3.4	-3.3	-3.8	-3.8	-2.0	-2.3	-2.9	-3.7	-4.0	-3.9	-3.5	-2.9	-2.4	-1.9	-.2	.0
-1.1	-1.1	-.9	-.6	-.8	-1.2	-1.7	-2.1	-1.6	-.7	-.5	-.6	-.7	-.6	-.8	-1.1	-1.8	-2.6	-3.2	-3.6	-3.9	-4.5	-5.2	-5.7	-5.9	-5.9	-5.7	-5.3	-5.0	-4.5	-4.1	-3.9	-3.4	-1.9	-1.4	-1.3

Figure 35. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



.4	.4	.4	.3	.3	.3	.3	.4	.5	.8	.8	.7	1.1	1.3	1.6	.9	.5	.4	.5	.5	.5	.5	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4
.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	.6	.8	1.6	1.9	1.9	1.3	.5	.5	.4	.6	.6	.5	.4	.6	.6	.4	.4	.5	.5	.5	.4	.4	.4	.4	.4	.4
.5	.6	.7	.8	.7	.6	.5	.5	.5	.5	.5	.6	.6	1.8	1.1	.7	.6	.5	.6	.6	.5	.5	.5	.5	.4	.4	.4	.6	.5	.5	.6	.7	.9	.7	.7	.6
.4	.5	.6	.5	.6	.7	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.6	.6	.5	.5	.4	.4	.4	.4	.4	.4	.7	.8	.7	.6	.6	.5	.6	.5	.4
.4	.4	.4	.4	.4	.5	.6	.6	.4	.6	.5	.5	.5	.5	.4	.4	.4	.5	.5	.6	.5	.6	.6	.6	.5	.7	.9	.8	.7	.5	.4	.5	.5	.4	.4	.4
.4	.4	.5	.4	.4	.4	.7	.6	.6	.6	.6	.4	.5	.5	.5	.4	.4	.6	.5	.6	.6	.7	.6	.7	.7	1.6	1.5	1.7	1.0	.6	.5	.6	.5	.5	.4	.4
.4	.4	.4	.4	.4	.4	.5	.7	.6	.5	.5	.4	.4	.5	.7	.5	.5	.5	.5	.5	.4	.6	.5	.6	.6	.5	.9	.9	.6	.5	.5	.5	.4	.4	.4	.4
.5	.4	.5	.4	.4	.5	.5	.5	.6	.7	.7	.7	.5	.5	.4	.5	.6	.5	.5	.5	.5	.6	.6	.5	.5	.6	.5	.5	.6	.5	1.0	.7	.6	.7	.7	.7
.7	.7	.7	.7	.7	.7	.6	.5	.5	.7	.9	.9	.6	.5	.5	.7	.7	.7	.8	1.0	.9	.8	.7	.6	.6	.8	.8	.8	.8	.9	.6	.6	.7	.6	.8	.7
.5	.5	.4	.4	.4	.4	.3	.4	.4	.4	.9	1.1	.9	.7	.5	.4	.4	.4	.5	1.1	1.1	.8	.4	.5	.6	.7	.8	.8	.9	.9	.6	1.0	.9	.9	.8	.8
.6	.6	.6	.4	.4	.4	.3	.4	.4	.4	.7	1.2	1.0	.9	.6	.4	.4	.4	.4	1.0	.9	.9	.7	.4	.4	.8	.5	.4	.4	.4	.9	.8	.6	.5	.6	.6
.4	.5	.5	.5	.6	.5	.4	.4	.4	.4	.5	1.2	1.5	.7	.6	.4	.4	.4	.4	.7	1.0	.9	.5	.4	.4	.4	.4	.4	.4	.7	.8	.7	.8	.5	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.6	.9	.9	.5	.5	.5	.5	.4	.4	.5	.6	.5	.5	.4	.4	.4	.4	.4	.4	.5	.5	.6	.6	.6	.4	.5
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.4	.5	.4	.4	.4	.4	.4	.4	.5	.4	.5	.5
.5	.5	.4	.4	.5	.5	.5	.5	.4	.5	.6	.5	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.5	.5	.4	.5	.5	.5
.5	.5	.5	.5	.6	.6	.6	.6	.6	.5	.5	.7	.5	.5	.5	.4	.4	.5	.5	.4	.4	.5	.7	1.0	.6	.6	.8	.9	.9	.7	.7	.8	.7	.6	.5	.5
.6	.6	.7	.8	1.1	1.5	1.3	1.0	.9	.7	.6	.7	.6	.5	.6	.7	1.0	1.7	2.2	2.6	2.7	2.6	2.4	2.1	2.0	1.9	2.0	2.5	2.1	1.9	1.7	1.3	1.3	1.3	.8	.7
.9	.8	1.0	1.1	1.1	1.0	1.2	1.4	1.2	.7	.6	.7	.7	.7	.8	1.0	.9	.9	1.1	1.2	1.3	1.5	1.7	1.9	2.1	2.0	1.9	1.7	1.5	1.3	1.1	1.1	1.2	1.4	1.1	1.0

Figure 36. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations



.2	.2	.2	.2	.2	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3	.2	.2	.2	.2	.2	.2	.2	.2
.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.5	.5	.5	.5	.5
.5	.5	.4	.3	.3	.4	.5	.5	.5	.5	.5	.5	.4	.4	.3	.3	.3	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.5	.5	.6	.5
.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.3	.3	.3	.3	.2	.2	.2	.2	.3	.3	.2	.3	.2	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.5
.3	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3	.3	.3	.2	.2	.2	.2	.2	.2	.3	.2	.2	.2	.2	.4	.4	.4	.3	.3	.3	.2	.1	.2	.2	.3
.2	.1	.1	.1	.1	.2	.1	.1	.1	.1	.2	.2	.1	.1	.1	.1	.1	.2	.2	.2	.2	.1	.2	.1	.2	.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.2	.2	.1	.1	.0	.1	.1	.1	.2	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.2	.1	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.2	.2	.1	.1	.2	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.2	.2	.1	.2	.1	.2	.2	.1	.2	.1	.1	.1	.1	.2
.3	.4	.2	.3	.3	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.2	.2	.3	.2	.3	.3	.3	.3	.3	.3	.3	.3	.2	.3	.3
.4	.4	.3	.3	.3	.3	.4	.3	.3	.3	.3	.4	.3	.4	.4	.4	.4	.3	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4
.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.3	.3	.4	.4	.4	.4	.4	.5	.5	.5	.5	.6	.6	.5	.5
.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.2	.2	.1	.1	.1	.1	.1	.2	.1	.2	.2	.2	.2	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4
.5	.5	.5	.5	.5	.5	.4	.4	.5	.5	.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.6	.5	.5

Figure 37. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

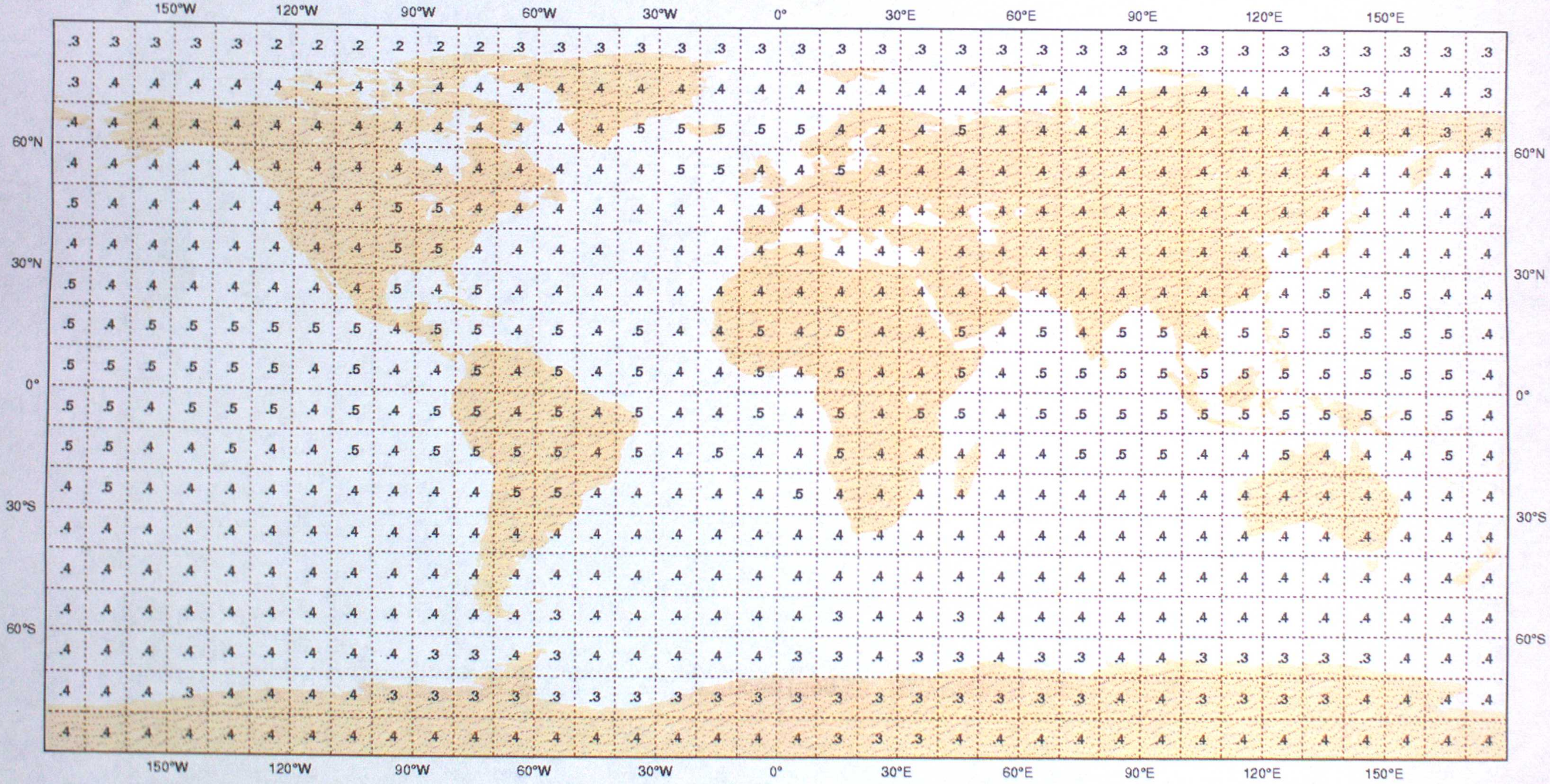
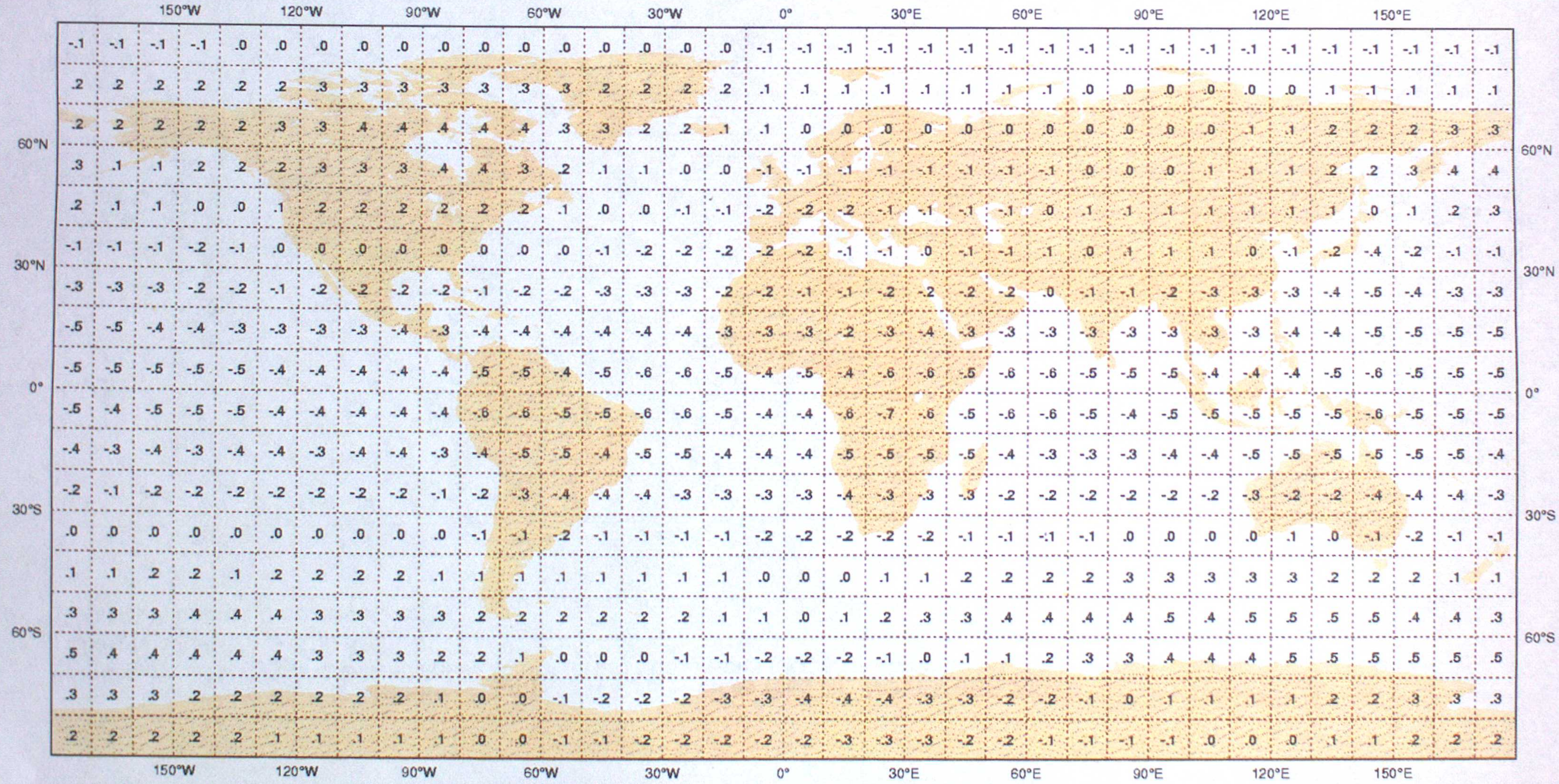
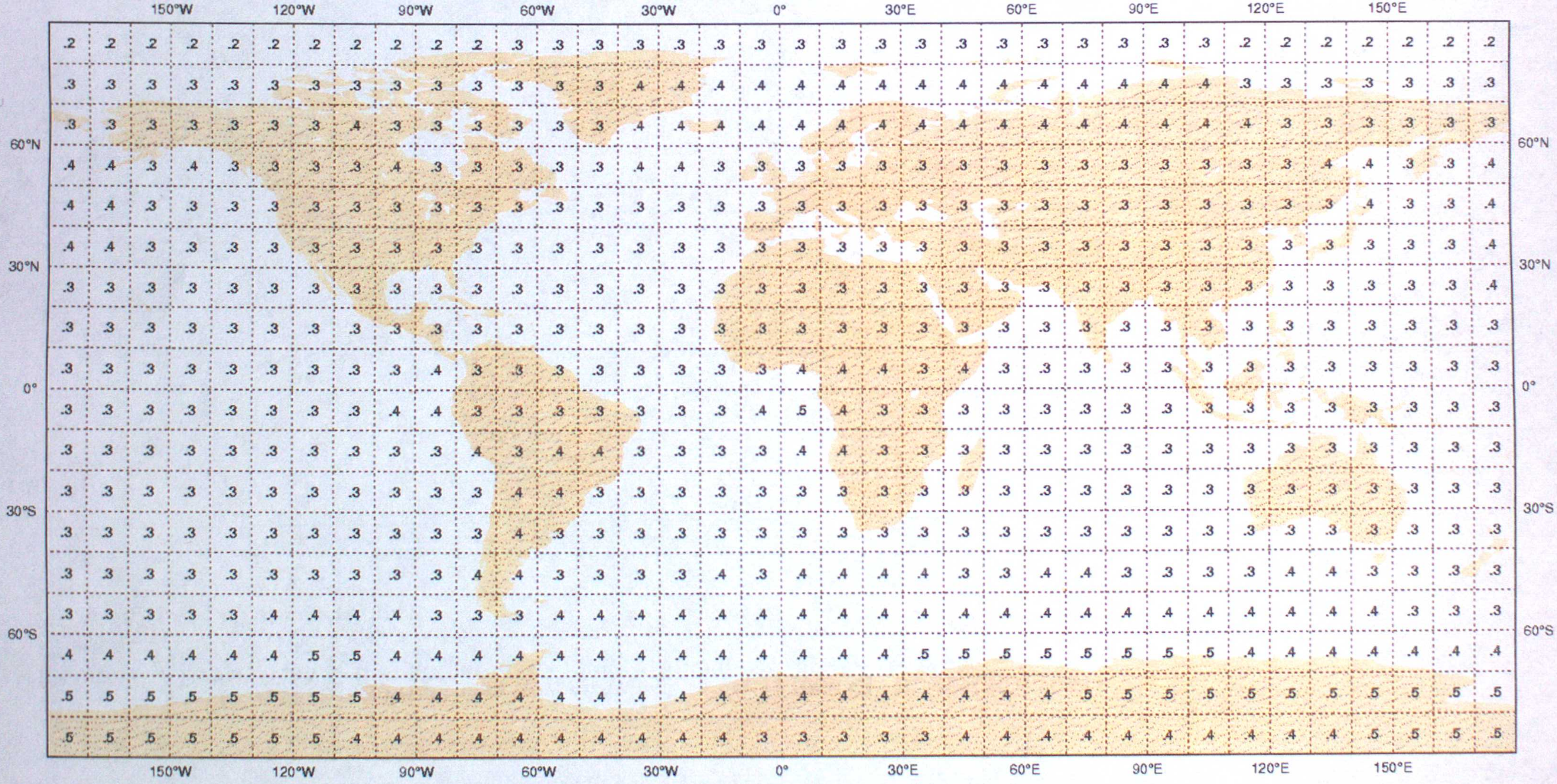

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.5 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.5 .4 .4 .4 .4 .4 .4 .4 .5 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .5 .4 .4
.5 .4 .5 .5 .5 .5 .5 .5 .4 .5 .5 .4 .5 .4 .5 .4 .4 .5 .4 .5 .4 .4 .5 .4 .5 .4 .5 .5 .4 .5 .5 .5 .5 .5 .5 .4
.5 .5 .5 .5 .5 .5 .4 .5 .4 .4 .5 .4 .5 .4 .5 .4 .4 .5 .4 .5 .4 .4 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4
.5 .5 .4 .5 .5 .5 .4 .5 .4 .5 .5 .4 .5 .4 .5 .4 .4 .5 .4 .5 .4 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4
.5 .5 .4 .4 .5 .4 .4 .5 .4 .5 .5 .5 .5 .4 .5 .4 .5 .4 .4 .5 .4 .4 .4 .4 .4 .5 .5 .5 .4 .4 .5 .4 .4 .4 .5 .4
.4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .3 .4 .4 .4 .4 .4 .3 .3 .4 .3 .3 .4 .3 .3 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4
.4 .4 .4 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4

Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations



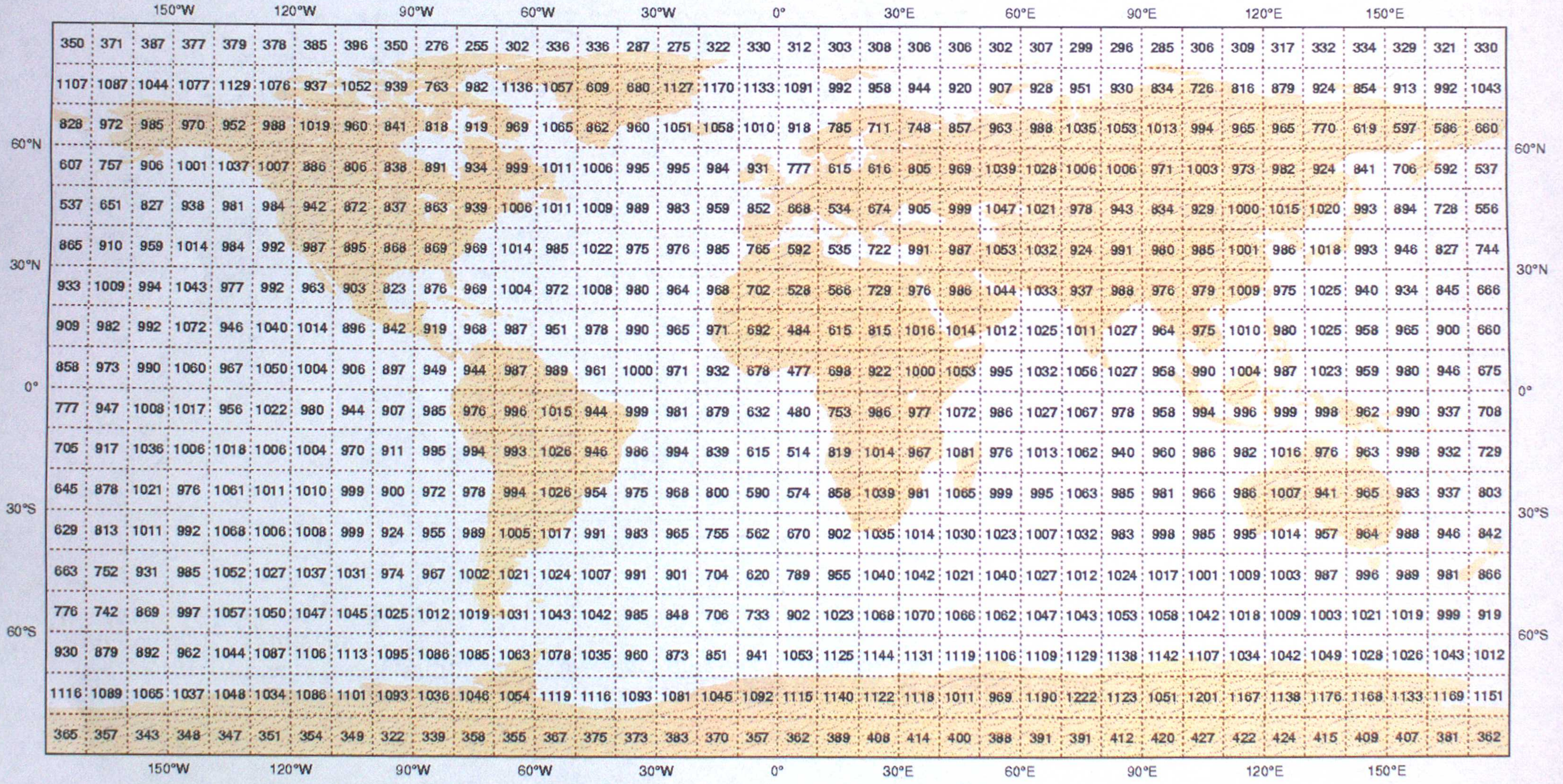
-.1	-.1	-.1	-.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1
.2	.2	.2	.2	.2	.2	.3	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1	.1
.2	.2	.2	.2	.2	.3	.3	.4	.4	.4	.4	.4	.3	.3	.2	.2	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.2	.2	.2	.3	.3
.3	.1	.1	.2	.2	.2	.3	.3	.3	.4	.4	.3	.2	.1	.1	.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	.0	.0	.0	.1	.1	.1	.2	.2	.3	.4	.4
.2	.1	.1	.0	.0	.1	.2	.2	.2	.2	.2	.2	.1	.0	.0	-.1	-.1	-.2	-.2	-.2	-.1	-.1	-.1	-.1	.0	.1	.1	.1	.1	.1	.1	.1	.0	.1	.2	.3
-.1	-.1	-.1	-.2	-.1	.0	.0	.0	.0	.0	.0	.0	.0	-.1	-.2	-.2	-.2	-.2	-.2	-.1	-.1	.0	-.1	-.1	.1	.0	.1	.1	.1	.0	-.1	-.2	-.4	-.2	-.1	-.1
-.3	-.3	-.3	-.2	-.2	-.1	-.2	-.2	-.2	-.2	-.1	-.2	-.2	-.3	-.3	-.3	-.2	-.2	-.1	-.1	-.2	-.2	-.2	-.2	.0	-.1	-.1	-.2	-.3	-.3	-.3	-.4	-.5	-.4	-.3	-.3
-.5	-.5	-.4	-.4	-.3	-.3	-.3	-.3	-.4	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.2	-.3	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.5	-.5	-.5	-.5
-.5	-.5	-.5	-.5	-.5	-.4	-.4	-.4	-.4	-.4	-.5	-.5	-.4	-.5	-.6	-.6	-.5	-.4	-.5	-.4	-.6	-.6	-.5	-.6	-.6	-.5	-.5	-.5	-.4	-.4	-.4	-.5	-.6	-.5	-.5	-.5
-.5	-.4	-.5	-.5	-.5	-.4	-.4	-.4	-.4	-.4	-.6	-.6	-.5	-.5	-.6	-.6	-.5	-.4	-.4	-.6	-.7	-.6	-.5	-.6	-.6	-.5	-.4	-.5	-.5	-.5	-.5	-.5	-.6	-.5	-.5	-.5
-.4	-.3	-.4	-.3	-.4	-.4	-.3	-.4	-.4	-.3	-.4	-.5	-.5	-.4	-.5	-.5	-.4	-.4	-.4	-.5	-.5	-.5	-.5	-.4	-.3	-.3	-.3	-.4	-.4	-.5	-.5	-.5	-.5	-.5	-.5	-.4
-.2	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.2	-.3	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.4	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.2	-.2	-.4	-.4	-.4	-.3
.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	-.1	-.1	-.2	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	-.1	.0	.0	.0	.0	.1	.0	-.1	-.2	-.1	-.1
.1	.1	.2	.2	.1	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.1	.1	.2	.2	.2	.2	.3	.3	.3	.3	.3	.2	.2	.2	.1	.1
.3	.3	.3	.4	.4	.4	.3	.3	.3	.3	.2	.2	.2	.2	.2	.2	.1	.1	.0	.1	.2	.3	.3	.4	.4	.4	.4	.5	.4	.5	.5	.5	.5	.4	.4	.3
.5	.4	.4	.4	.4	.4	.3	.3	.3	.2	.2	.1	.0	.0	.0	-.1	-.1	-.2	-.2	-.2	-.1	.0	.1	.1	.2	.3	.3	.4	.4	.4	.5	.5	.5	.5	.5	.5
.3	.3	.3	.2	.2	.2	.2	.2	.2	.1	.0	.0	-.1	-.2	-.2	-.2	-.3	-.3	-.4	-.4	-.4	-.3	-.3	-.2	-.2	-.1	.0	.1	.1	.1	.1	.2	.2	.3	.3	.3
.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.0	.0	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.2	-.2	-.1	-.1	-.1	.0	.0	.0	.1	.1	.2	.2	.2	.2

Figure 39. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations



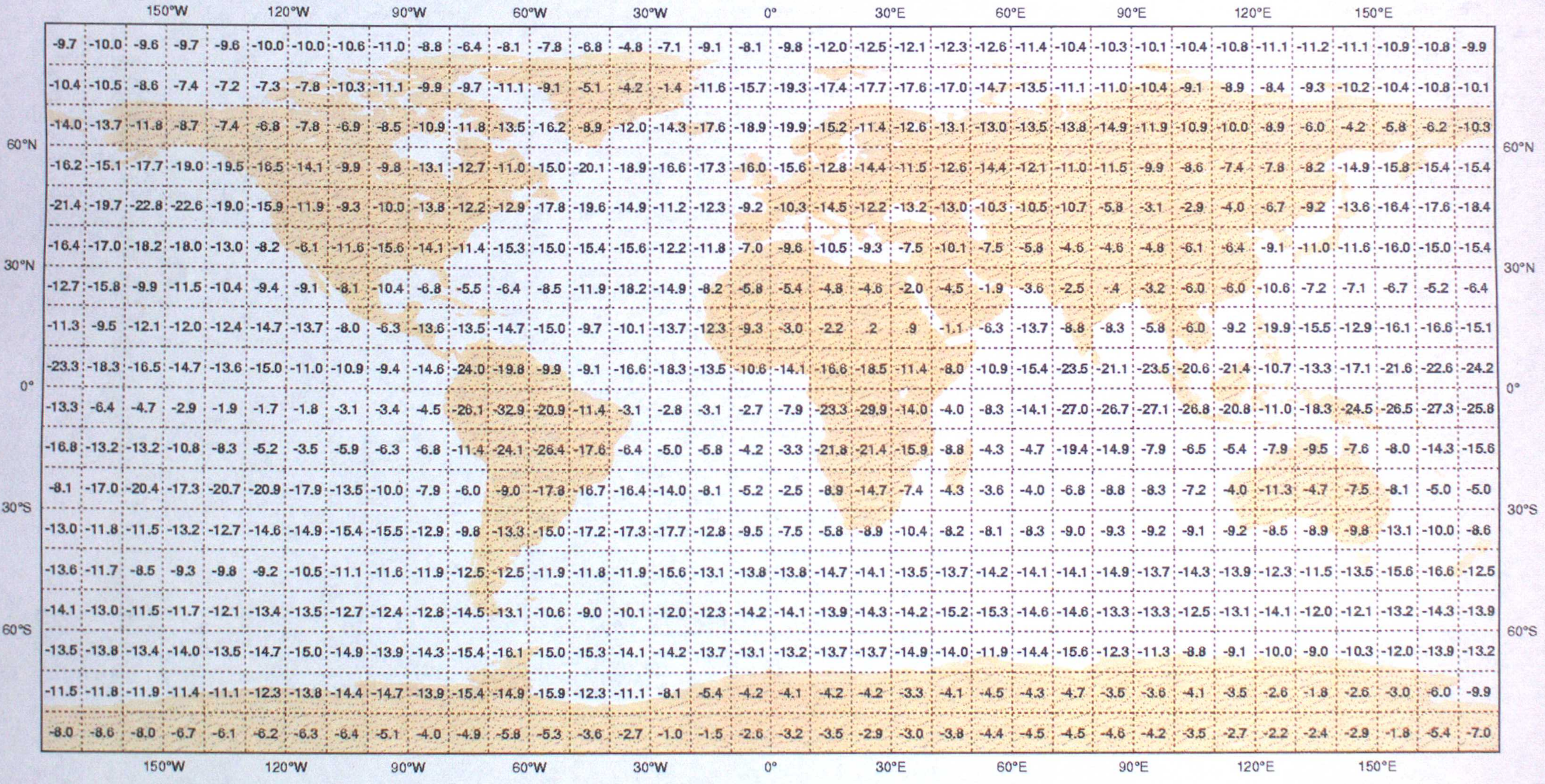
.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.2	.2
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3
.4	.4	.3	.4	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.4
.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.4
.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.5	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.4	.4	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.4	.3	.4	.4	.4	.4	.3	.3	.4	.4	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3
.3	.3	.3	.3	.3	.4	.4	.4	.4	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3
.4	.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4
.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5

Figure 40. ATOVS mean daily count. NOVEMBER 2004
NOAA16, using all observations
Global average number of observations in 24 hours = 573348



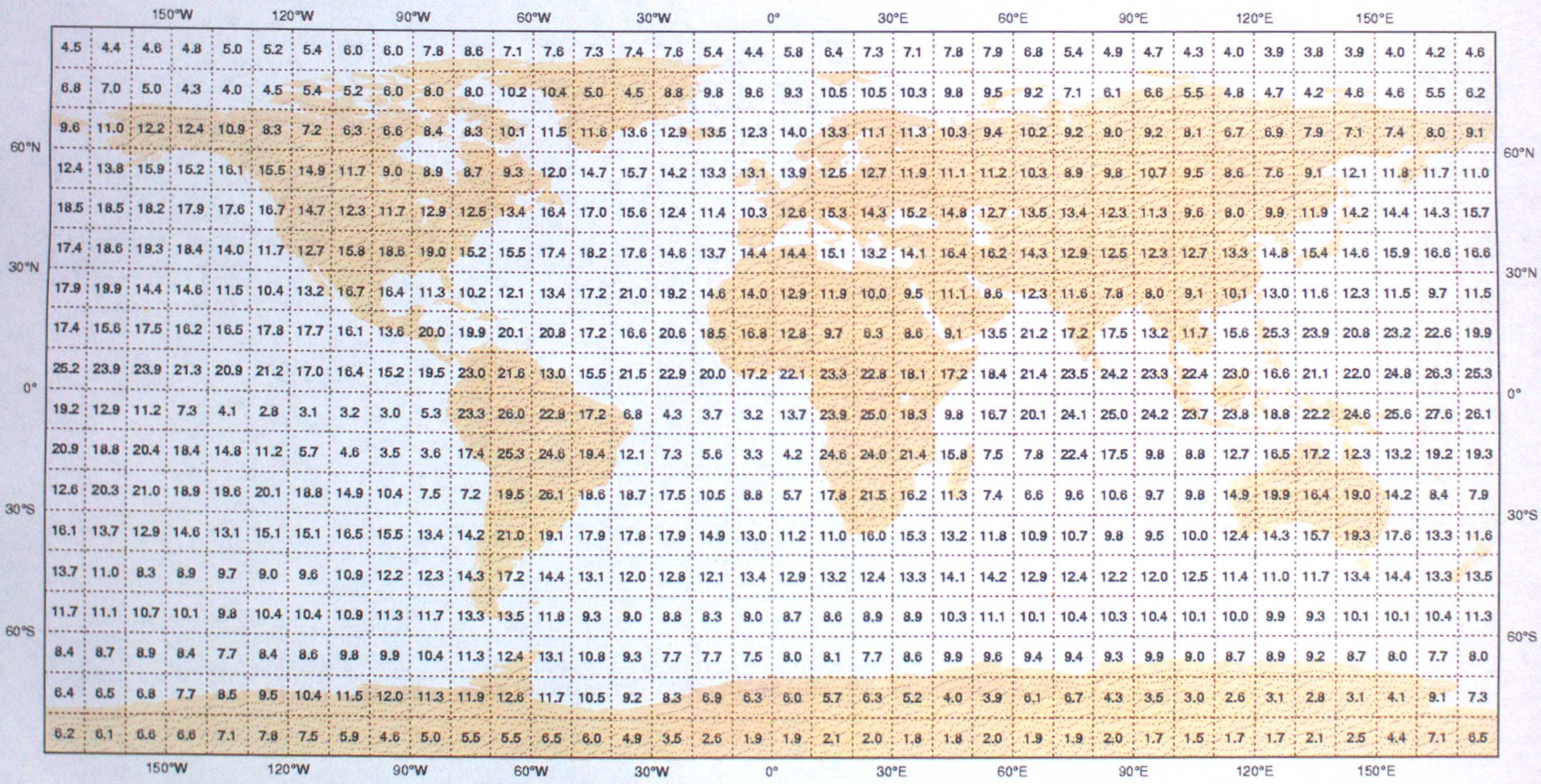
350	371	387	377	379	378	385	396	350	276	255	302	336	336	287	275	322	330	312	303	308	306	306	302	307	299	296	285	306	309	317	332	334	329	321	330
1107	1087	1044	1077	1129	1076	937	1052	939	763	982	1136	1057	609	680	1127	1170	1133	1091	992	958	944	920	907	928	951	930	834	726	816	879	924	854	913	992	1043
828	972	985	970	952	988	1019	960	841	818	919	969	1065	862	960	1051	1058	1010	918	785	711	748	857	963	988	1035	1053	1013	994	965	965	770	619	597	586	660
607	757	906	1001	1037	1007	886	806	838	891	934	999	1011	1006	995	995	984	931	777	615	616	805	969	1039	1028	1006	1006	971	1003	973	982	924	841	706	592	537
537	651	827	938	981	984	942	872	837	863	939	1006	1011	1009	989	983	959	852	668	534	674	905	999	1047	1021	978	943	834	929	1000	1015	1020	993	894	728	556
865	910	959	1014	984	992	987	895	868	869	969	1014	985	1022	975	976	985	765	592	535	722	991	987	1053	1032	924	991	980	985	1001	986	1018	993	946	827	744
933	1009	994	1043	977	992	963	903	823	876	969	1004	972	1008	980	964	968	702	528	566	729	976	986	1044	1033	937	988	976	979	1009	975	1025	940	934	845	666
909	982	992	1072	946	1040	1014	896	842	919	968	987	951	978	990	965	971	692	484	615	815	1016	1014	1012	1025	1011	1027	964	975	1010	980	1025	958	965	900	660
858	973	990	1060	967	1050	1004	906	897	949	944	987	989	961	1000	971	932	678	477	698	922	1000	1053	995	1032	1056	1027	958	990	1004	987	1023	959	980	946	675
777	947	1008	1017	956	1022	980	944	907	985	976	996	1015	944	999	981	879	632	480	753	986	977	1072	986	1027	1067	978	958	994	996	999	998	962	990	937	708
705	917	1036	1006	1018	1006	1004	970	911	995	994	993	1026	946	986	994	839	615	514	819	1014	967	1081	976	1013	1062	940	960	986	982	1016	976	963	998	932	729
645	878	1021	976	1061	1011	1010	999	900	972	978	994	1026	954	975	968	800	590	574	858	1039	981	1065	999	995	1063	985	981	966	986	1007	941	965	983	937	803
629	813	1011	992	1068	1006	1008	999	924	955	989	1005	1017	991	983	965	755	562	670	902	1035	1014	1030	1023	1007	1032	983	998	985	995	1014	957	964	988	946	842
663	752	931	985	1052	1027	1037	1031	974	967	1002	1021	1024	1007	991	901	704	620	789	955	1040	1042	1021	1040	1027	1012	1024	1017	1001	1009	1003	987	996	989	981	866
776	742	869	997	1057	1050	1047	1045	1025	1012	1019	1031	1043	1042	985	848	706	733	902	1023	1068	1070	1066	1062	1047	1043	1053	1058	1042	1018	1009	1003	1021	1019	999	919
930	879	892	962	1044	1087	1106	1113	1095	1086	1085	1063	1078	1035	960	873	851	941	1053	1125	1144	1131	1119	1106	1109	1129	1138	1142	1107	1034	1042	1049	1028	1026	1043	1012
1116	1089	1065	1037	1048	1034	1086	1101	1093	1036	1046	1054	1119	1116	1093	1081	1045	1092	1115	1140	1122	1118	1011	969	1190	1222	1123	1051	1201	1167	1138	1176	1168	1133	1169	1151
365	357	343	348	347	351	354	349	322	339	358	355	367	375	373	383	370	357	362	389	408	414	400	388	391	391	412	420	427	422	424	415	409	407	381	362

Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS8 (Surface)
NOAA16, using all observations



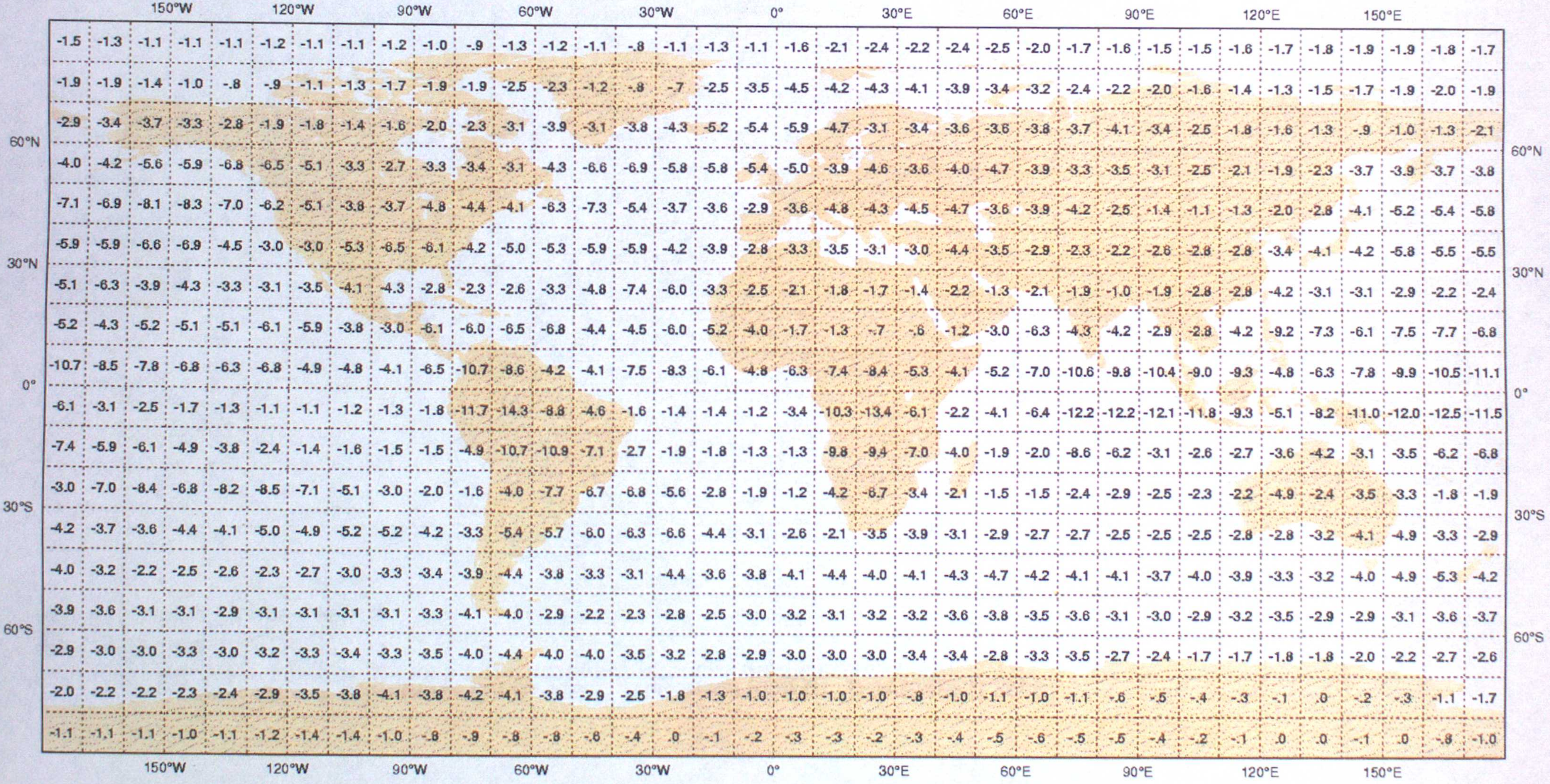
-9.7	-10.0	-9.6	-9.7	-9.6	-10.0	-10.0	-10.6	-11.0	-8.8	-6.4	-8.1	-7.8	-6.8	-4.8	-7.1	-9.1	-8.1	-9.8	-12.0	-12.5	-12.1	-12.3	-12.6	-11.4	-10.4	-10.3	-10.1	-10.4	-10.8	-11.1	-11.2	-11.1	-10.9	-10.8	-9.9
-10.4	-10.5	-8.6	-7.4	-7.2	-7.3	-7.8	-10.3	-11.1	-9.9	-9.7	-11.1	-9.1	-5.1	-4.2	-1.4	-11.6	-15.7	-19.3	-17.4	-17.7	-17.6	-17.0	-14.7	-13.5	-11.1	-11.0	-10.4	-9.1	-8.9	-8.4	-9.3	-10.2	-10.4	-10.8	-10.1
-14.0	-13.7	-11.8	-8.7	-7.4	-6.8	-7.8	-6.9	-8.5	-10.9	-11.8	-13.5	-16.2	-8.9	-12.0	-14.3	-17.6	-18.9	-19.9	-15.2	-11.4	-12.6	-13.1	-13.0	-13.5	-13.8	-14.9	-11.9	-10.9	-10.0	-8.9	-6.0	-4.2	-5.8	-6.2	-10.3
-16.2	-15.1	-17.7	-19.0	-19.5	-16.5	-14.1	-9.9	-9.8	-13.1	-12.7	-11.0	-15.0	-20.1	-18.9	-16.6	-17.3	-16.0	-15.6	-12.8	-14.4	-11.5	-12.6	-14.4	-12.1	-11.0	-11.5	-9.9	-8.6	-7.4	-7.8	-8.2	-14.9	-15.8	-15.4	-15.4
-21.4	-19.7	-22.8	-22.6	-19.0	-15.9	-11.9	-9.3	-10.0	-13.8	-12.2	-12.9	-17.8	-19.6	-14.9	-11.2	-12.3	-9.2	-10.3	-14.5	-12.2	-13.2	-13.0	-10.3	-10.5	-10.7	-5.8	-3.1	-2.9	-4.0	-6.7	-9.2	-13.6	-16.4	-17.6	-18.4
-16.4	-17.0	-18.2	-18.0	-13.0	-8.2	-6.1	-11.6	-15.6	-14.1	-11.4	-15.3	-15.0	-15.4	-15.6	-12.2	-11.8	-7.0	-9.6	-10.5	-9.3	-7.5	-10.1	-7.5	-5.8	-4.6	-4.6	-4.8	-6.1	-6.4	-9.1	-11.0	-11.6	-16.0	-15.0	-15.4
-12.7	-15.8	-9.9	-11.5	-10.4	-9.4	-9.1	-8.1	-10.4	-6.8	-5.5	-6.4	-8.5	-11.9	-18.2	-14.9	-8.2	-5.8	-5.4	-4.8	-4.6	-2.0	-4.5	-1.9	-3.6	-2.5	-.4	-3.2	-6.0	-6.0	-10.6	-7.2	-7.1	-6.7	-5.2	-6.4
-11.3	-9.5	-12.1	-12.0	-12.4	-14.7	-13.7	-8.0	-6.3	-13.6	-13.5	-14.7	-15.0	-9.7	-10.1	-13.7	-12.3	-9.3	-3.0	-2.2	.2	.9	-1.1	-6.3	-13.7	-8.8	-8.3	-5.8	-6.0	-9.2	-19.9	-15.5	-12.9	-16.1	-16.6	-15.1
-23.3	-18.3	-16.5	-14.7	-13.6	-15.0	-11.0	-10.9	-9.4	-14.6	-24.0	-19.8	-9.9	-9.1	-16.6	-18.3	-13.5	-10.6	-14.1	-16.6	-18.5	-11.4	-8.0	-10.9	-15.4	-23.5	-21.1	-23.5	-20.6	-21.4	-10.7	-13.3	-17.1	-21.6	-22.6	-24.2
-13.3	-6.4	-4.7	-2.9	-1.9	-1.7	-1.8	-3.1	-3.4	-4.5	-26.1	-32.9	-20.9	-11.4	-3.1	-2.8	-3.1	-2.7	-7.9	-23.3	-29.9	-14.0	-4.0	-8.3	-14.1	-27.0	-26.7	-27.1	-26.8	-20.8	-11.0	-18.3	-24.5	-26.5	-27.3	-25.8
-16.8	-13.2	-13.2	-10.8	-8.3	-5.2	-3.5	-5.9	-6.3	-6.8	-11.4	-24.1	-26.4	-17.6	-6.4	-5.0	-5.8	-4.2	-3.3	-21.8	-21.4	-15.9	-8.8	-4.3	-4.7	-19.4	-14.9	-7.9	-6.5	-5.4	-7.9	-9.5	-7.6	-8.0	-14.3	-15.6
-8.1	-17.0	-20.4	-17.3	-20.7	-20.9	-17.9	-13.5	-10.0	-7.9	-6.0	-9.0	-17.8	-16.7	-16.4	-14.0	-8.1	-5.2	-2.5	-8.9	-14.7	-7.4	-4.3	-3.6	-4.0	-6.8	-8.8	-8.3	-7.2	-4.0	-11.3	-4.7	-7.5	-8.1	-5.0	-5.0
-13.0	-11.8	-11.5	-13.2	-12.7	-14.6	-14.9	-15.4	-15.5	-12.9	-9.8	-13.3	-15.0	-17.2	-17.3	-17.7	-12.8	-9.5	-7.5	-5.8	-8.9	-10.4	-8.2	-8.1	-8.3	-9.0	-9.3	-9.2	-9.1	-9.2	-8.5	-8.9	-9.8	-13.1	-10.0	-8.6
-13.6	-11.7	-8.5	-9.3	-9.8	-9.2	-10.5	-11.1	-11.6	-11.9	-12.5	-12.5	-11.9	-11.8	-11.9	-15.6	-13.1	-13.8	-13.8	-14.7	-14.1	-13.5	-13.7	-14.2	-14.1	-14.1	-14.9	-13.7	-14.3	-13.9	-12.3	-11.5	-13.5	-15.6	-16.6	-12.5
-14.1	-13.0	-11.5	-11.7	-12.1	-13.4	-13.5	-12.7	-12.4	-12.8	-14.5	-13.1	-10.6	-9.0	-10.1	-12.0	-12.3	-14.2	-14.1	-13.9	-14.3	-14.2	-15.2	-15.3	-14.6	-14.6	-13.3	-13.3	-12.5	-13.1	-14.1	-12.0	-12.1	-13.2	-14.3	-13.9
-13.5	-13.8	-13.4	-14.0	-13.5	-14.7	-15.0	-14.9	-13.9	-14.3	-15.4	-16.1	-15.0	-15.3	-14.1	-14.2	-13.7	-13.1	-13.2	-13.7	-13.7	-14.9	-14.0	-11.9	-14.4	-15.6	-12.3	-11.3	-8.8	-9.1	-10.0	-9.0	-10.3	-12.0	-13.9	-13.2
-11.5	-11.8	-11.9	-11.4	-11.1	-12.3	-13.8	-14.4	-14.7	-13.9	-15.4	-14.9	-15.9	-12.3	-11.1	-8.1	-5.4	-4.2	-4.1	-4.2	-4.2	-3.3	-4.1	-4.5	-4.3	-4.7	-3.5	-3.6	-4.1	-3.5	-2.6	-1.8	-2.6	-3.0	-6.0	-9.9
-8.0	-8.6	-8.0	-6.7	-6.1	-6.2	-6.3	-6.4	-5.1	-4.0	-4.9	-5.8	-5.3	-3.6	-2.7	-1.0	-1.5	-2.6	-3.2	-3.5	-2.9	-3.0	-3.8	-4.4	-4.5	-4.5	-4.6	-4.2	-3.5	-2.7	-2.2	-2.4	-2.9	-1.8	-5.4	-7.0

Figure 42. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS8 (Surface)
NOAA16, using all observations



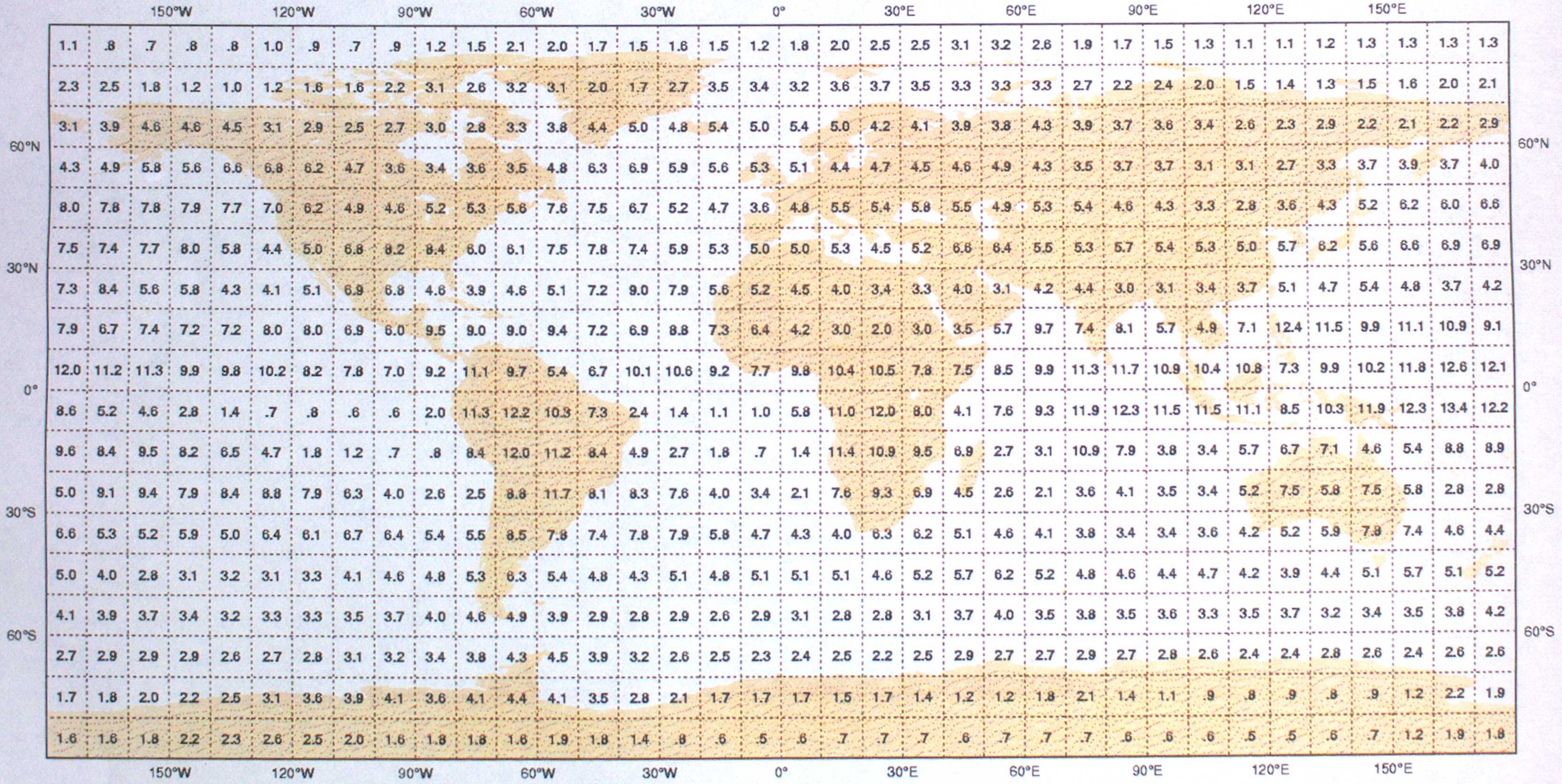
4.5	4.4	4.6	4.8	5.0	5.2	5.4	6.0	6.0	7.8	8.6	7.1	7.6	7.3	7.4	7.6	5.4	4.4	5.8	6.4	7.3	7.1	7.8	7.9	6.8	5.4	4.9	4.7	4.3	4.0	3.9	3.8	3.9	4.0	4.2	4.6
6.8	7.0	5.0	4.3	4.0	4.5	5.4	5.2	6.0	8.0	8.0	10.2	10.4	5.0	4.5	8.8	9.8	9.6	9.3	10.5	10.5	10.3	9.8	9.5	9.2	7.1	6.1	6.6	5.5	4.8	4.7	4.2	4.6	4.6	5.5	6.2
9.6	11.0	12.2	12.4	10.9	8.3	7.2	6.3	6.6	8.4	8.3	10.1	11.5	11.6	13.6	12.9	13.5	12.3	14.0	13.3	11.1	11.3	10.3	9.4	10.2	9.2	9.0	9.2	8.1	6.7	6.9	7.9	7.1	7.4	8.0	9.1
12.4	13.8	15.9	15.2	16.1	15.5	14.9	11.7	9.0	8.9	8.7	9.3	12.0	14.7	15.7	14.2	13.3	13.1	13.9	12.5	12.7	11.9	11.1	11.2	10.3	8.9	9.8	10.7	9.5	8.6	7.6	9.1	12.1	11.8	11.7	11.0
18.5	18.5	18.2	17.9	17.6	16.7	14.7	12.3	11.7	12.9	12.5	13.4	16.4	17.0	15.6	12.4	11.4	10.3	12.6	15.3	14.3	15.2	14.8	12.7	13.5	13.4	12.3	11.3	9.6	8.0	9.9	11.9	14.2	14.4	14.3	15.7
17.4	18.6	19.3	18.4	14.0	11.7	12.7	15.8	18.6	19.0	15.2	15.5	17.4	18.2	17.6	14.6	13.7	14.4	14.4	15.1	13.2	14.1	16.4	16.2	14.3	12.9	12.5	12.3	12.7	13.3	14.8	15.4	14.6	15.9	16.6	16.6
17.9	19.9	14.4	14.6	11.5	10.4	13.2	16.7	16.4	11.3	10.2	12.1	13.4	17.2	21.0	19.2	14.6	14.0	12.9	11.9	10.0	9.5	11.1	8.6	12.3	11.6	7.8	8.0	9.1	10.1	13.0	11.6	12.3	11.5	9.7	11.5
17.4	15.6	17.5	16.2	16.5	17.8	17.7	16.1	13.6	20.0	19.9	20.1	20.8	17.2	16.6	20.6	18.5	16.8	12.8	9.7	6.3	8.6	9.1	13.5	21.2	17.2	17.5	13.2	11.7	15.6	25.3	23.9	20.8	23.2	22.6	19.9
25.2	23.9	23.9	21.3	20.9	21.2	17.0	16.4	15.2	19.5	23.0	21.6	13.0	15.5	21.5	22.9	20.0	17.2	22.1	23.3	22.8	18.1	17.2	18.4	21.4	23.5	24.2	23.3	22.4	23.0	16.6	21.1	22.0	24.8	26.3	25.3
19.2	12.9	11.2	7.3	4.1	2.8	3.1	3.2	3.0	5.3	23.3	26.0	22.8	17.2	6.8	4.3	3.7	3.2	13.7	23.9	25.0	18.3	9.8	16.7	20.1	24.1	25.0	24.2	23.7	23.8	18.8	22.2	24.6	25.6	27.6	26.1
20.9	18.8	20.4	18.4	14.8	11.2	5.7	4.6	3.5	3.6	17.4	25.3	24.6	19.4	12.1	7.3	5.6	3.3	4.2	24.6	24.0	21.4	15.8	7.5	7.8	22.4	17.5	9.8	8.8	12.7	16.5	17.2	12.3	13.2	19.2	19.3
12.6	20.3	21.0	18.9	19.6	20.1	18.8	14.9	10.4	7.5	7.2	19.5	26.1	18.6	18.7	17.5	10.5	8.8	5.7	17.8	21.5	16.2	11.3	7.4	6.6	9.6	10.6	9.7	9.8	14.9	19.9	16.4	19.0	14.2	8.4	7.9
16.1	13.7	12.9	14.6	13.1	15.1	15.1	16.5	15.5	13.4	14.2	21.0	19.1	17.9	17.8	17.9	14.9	13.0	11.2	11.0	16.0	15.3	13.2	11.8	10.9	10.7	9.8	9.5	10.0	12.4	14.3	15.7	19.3	17.6	13.3	11.6
13.7	11.0	8.3	8.9	9.7	9.0	9.6	10.9	12.2	12.3	14.3	17.2	14.4	13.1	12.0	12.8	12.1	13.4	12.9	13.2	12.4	13.3	14.1	14.2	12.9	12.4	12.2	12.0	12.5	11.4	11.0	11.7	13.4	14.4	13.3	13.5
11.7	11.1	10.7	10.1	9.8	10.4	10.4	10.9	11.3	11.7	13.3	13.5	11.8	9.3	9.0	8.8	8.3	9.0	8.7	8.6	8.9	8.9	10.3	11.1	10.1	10.4	10.3	10.4	10.1	10.0	9.9	9.3	10.1	10.1	10.4	11.3
8.4	8.7	8.9	8.4	7.7	8.4	8.6	9.8	9.9	10.4	11.3	12.4	13.1	10.8	9.3	7.7	7.7	7.5	8.0	8.1	7.7	8.6	9.9	9.6	9.4	9.4	9.3	9.9	9.0	8.7	8.9	9.2	8.7	8.0	7.7	8.0
6.4	6.5	6.8	7.7	8.5	9.5	10.4	11.5	12.0	11.3	11.9	12.6	11.7	10.5	9.2	8.3	6.9	6.3	6.0	5.7	6.3	5.2	4.0	3.9	6.1	6.7	4.3	3.5	3.0	2.6	3.1	2.8	3.1	4.1	9.1	7.3
6.2	6.1	6.6	6.6	7.1	7.8	7.5	5.9	4.6	5.0	5.5	5.5	6.5	6.0	4.9	3.5	2.6	1.9	1.9	2.1	2.0	1.8	1.8	2.0	1.9	1.9	2.0	1.7	1.5	1.7	1.7	2.1	2.5	4.4	7.1	6.5

Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



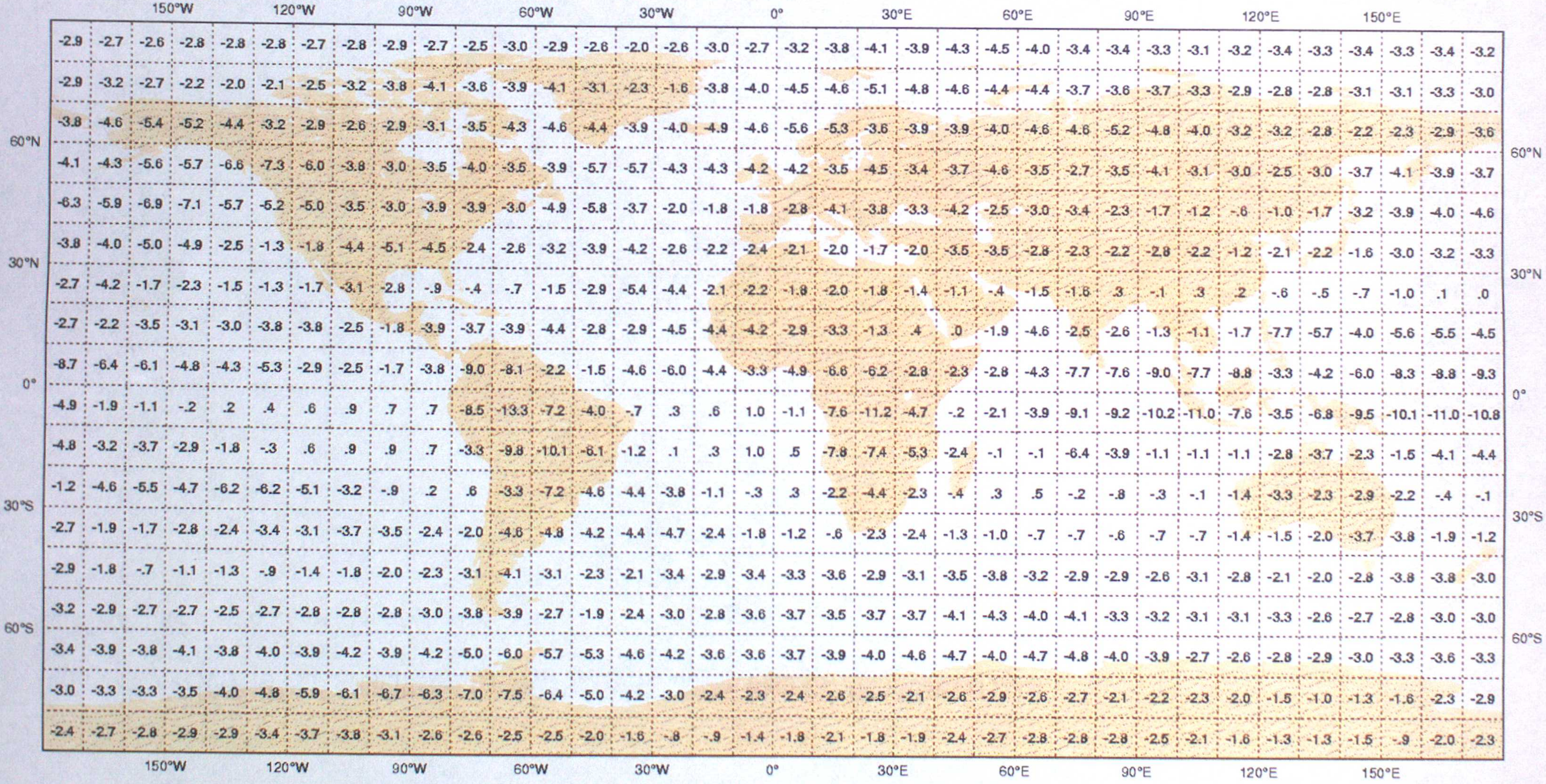
-1.5	-1.3	-1.1	-1.1	-1.1	-1.2	-1.1	-1.1	-1.2	-1.0	-.9	-1.3	-1.2	-1.1	-.8	-1.1	-1.3	-1.1	-1.6	-2.1	-2.4	-2.2	-2.4	-2.5	-2.0	-1.7	-1.6	-1.5	-1.5	-1.6	-1.7	-1.8	-1.9	-1.9	-1.8	-1.7
-1.9	-1.9	-1.4	-1.0	-.8	-.9	-1.1	-1.3	-1.7	-1.9	-1.9	-2.5	-2.3	-1.2	-.8	-.7	-2.5	-3.5	-4.5	-4.2	-4.3	-4.1	-3.9	-3.4	-3.2	-2.4	-2.2	-2.0	-1.6	-1.4	-1.3	-1.5	-1.7	-1.9	-2.0	-1.9
-2.9	-3.4	-3.7	-3.3	-2.8	-1.9	-1.8	-1.4	-1.6	-2.0	-2.3	-3.1	-3.9	-3.1	-3.8	-4.3	-5.2	-5.4	-5.9	-4.7	-3.1	-3.4	-3.6	-3.6	-3.8	-3.7	-4.1	-3.4	-2.5	-1.8	-1.6	-1.3	-.9	-1.0	-1.3	-2.1
-4.0	-4.2	-5.6	-5.9	-6.8	-6.5	-5.1	-3.3	-2.7	-3.3	-3.4	-3.1	-4.3	-6.6	-6.9	-5.8	-5.8	-5.4	-5.0	-3.9	-4.6	-3.6	-4.0	-4.7	-3.9	-3.3	-3.5	-3.1	-2.5	-2.1	-1.9	-2.3	-3.7	-3.9	-3.7	-3.8
-7.1	-6.9	-8.1	-8.3	-7.0	-6.2	-5.1	-3.8	-3.7	-4.8	-4.4	-4.1	-6.3	-7.3	-5.4	-3.7	-3.6	-2.9	-3.6	-4.8	-4.3	-4.5	-4.7	-3.6	-3.9	-4.2	-2.5	-1.4	-1.1	-1.3	-2.0	-2.8	-4.1	-5.2	-5.4	-5.8
-5.9	-5.9	-6.6	-6.9	-4.5	-3.0	-3.0	-5.3	-6.5	-6.1	-4.2	-5.0	-5.3	-5.9	-5.9	-4.2	-3.9	-2.8	-3.3	-3.5	-3.1	-3.0	-4.4	-3.5	-2.9	-2.3	-2.2	-2.6	-2.8	-2.8	-3.4	-4.1	-4.2	-5.8	-5.5	-5.5
-5.1	-6.3	-3.9	-4.3	-3.3	-3.1	-3.5	-4.1	-4.3	-2.8	-2.3	-2.6	-3.3	-4.8	-7.4	-6.0	-3.3	-2.5	-2.1	-1.8	-1.7	-1.4	-2.2	-1.3	-2.1	-1.9	-1.0	-1.9	-2.8	-2.8	-4.2	-3.1	-3.1	-2.9	-2.2	-2.4
-5.2	-4.3	-5.2	-5.1	-5.1	-6.1	-5.9	-3.8	-3.0	-6.1	-6.0	-6.5	-6.8	-4.4	-4.5	-6.0	-5.2	-4.0	-1.7	-1.3	-.7	-.6	-1.2	-3.0	-6.3	-4.3	-4.2	-2.9	-2.8	-4.2	-9.2	-7.3	-6.1	-7.5	-7.7	-6.8
-10.7	-8.5	-7.8	-6.8	-6.3	-6.8	-4.9	-4.8	-4.1	-6.5	-10.7	-8.6	-4.2	-4.1	-7.5	-8.3	-6.1	-4.8	-6.3	-7.4	-8.4	-5.3	-4.1	-5.2	-7.0	-10.6	-9.8	-10.4	-9.0	-9.3	-4.8	-6.3	-7.8	-9.9	-10.5	-11.1
-6.1	-3.1	-2.5	-1.7	-1.3	-1.1	-1.1	-1.2	-1.3	-1.8	-11.7	-14.3	-8.8	-4.6	-1.6	-1.4	-1.4	-1.2	-3.4	-10.3	-13.4	-6.1	-2.2	-4.1	-6.4	-12.2	-12.2	-12.1	-11.8	-9.3	-5.1	-8.2	-11.0	-12.0	-12.5	-11.5
-7.4	-5.9	-6.1	-4.9	-3.8	-2.4	-1.4	-1.6	-1.5	-1.5	-4.9	-10.7	-10.9	-7.1	-2.7	-1.9	-1.8	-1.3	-1.3	-9.8	-9.4	-7.0	-4.0	-1.9	-2.0	-8.6	-6.2	-3.1	-2.6	-2.7	-3.6	-4.2	-3.1	-3.5	-6.2	-6.8
-3.0	-7.0	-8.4	-6.8	-8.2	-8.5	-7.1	-5.1	-3.0	-2.0	-1.6	-4.0	-7.7	-6.7	-6.8	-5.6	-2.8	-1.9	-1.2	-4.2	-6.7	-3.4	-2.1	-1.5	-1.5	-2.4	-2.9	-2.5	-2.3	-2.2	-4.9	-2.4	-3.5	-3.3	-1.8	-1.9
-4.2	-3.7	-3.6	-4.4	-4.1	-5.0	-4.9	-5.2	-5.2	-4.2	-3.3	-5.4	-5.7	-6.0	-6.3	-6.6	-4.4	-3.1	-2.6	-2.1	-3.5	-3.9	-3.1	-2.9	-2.7	-2.7	-2.5	-2.5	-2.5	-2.8	-2.8	-3.2	-4.1	-4.9	-3.3	-2.9
-4.0	-3.2	-2.2	-2.5	-2.6	-2.3	-2.7	-3.0	-3.3	-3.4	-3.9	-4.4	-3.8	-3.3	-3.1	-4.4	-3.6	-3.8	-4.1	-4.4	-4.0	-4.1	-4.3	-4.7	-4.2	-4.1	-4.1	-3.7	-4.0	-3.9	-3.3	-3.2	-4.0	-4.9	-5.3	-4.2
-3.9	-3.6	-3.1	-3.1	-2.9	-3.1	-3.1	-3.1	-3.1	-3.3	-4.1	-4.0	-2.9	-2.2	-2.3	-2.8	-2.5	-3.0	-3.2	-3.1	-3.2	-3.2	-3.6	-3.8	-3.5	-3.6	-3.1	-3.0	-2.9	-3.2	-3.5	-2.9	-2.9	-3.1	-3.6	-3.7
-2.9	-3.0	-3.0	-3.3	-3.0	-3.2	-3.3	-3.4	-3.3	-3.5	-4.0	-4.4	-4.0	-4.0	-3.5	-3.2	-2.8	-2.9	-3.0	-3.0	-3.0	-3.4	-3.4	-2.8	-3.3	-3.5	-2.7	-2.4	-1.7	-1.7	-1.8	-1.8	-2.0	-2.2	-2.7	-2.6
-2.0	-2.2	-2.2	-2.3	-2.4	-2.9	-3.5	-3.8	-4.1	-3.8	-4.2	-4.1	-3.8	-2.9	-2.5	-1.8	-1.3	-1.0	-1.0	-1.0	-1.0	-.8	-1.0	-1.1	-1.0	-1.1	-.6	-.5	-.4	-.3	-.1	.0	-.2	-.3	-1.1	-1.7
-1.1	-1.1	-1.1	-1.0	-1.1	-1.2	-1.4	-1.4	-1.0	-.8	-.9	-.8	-.8	-.6	-.4	.0	-.1	-.2	-.3	-.3	-.2	-.3	-.4	-.5	-.6	-.5	-.5	-.4	-.2	-.1	.0	.0	-.1	.0	-.8	-1.0

Figure 44. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



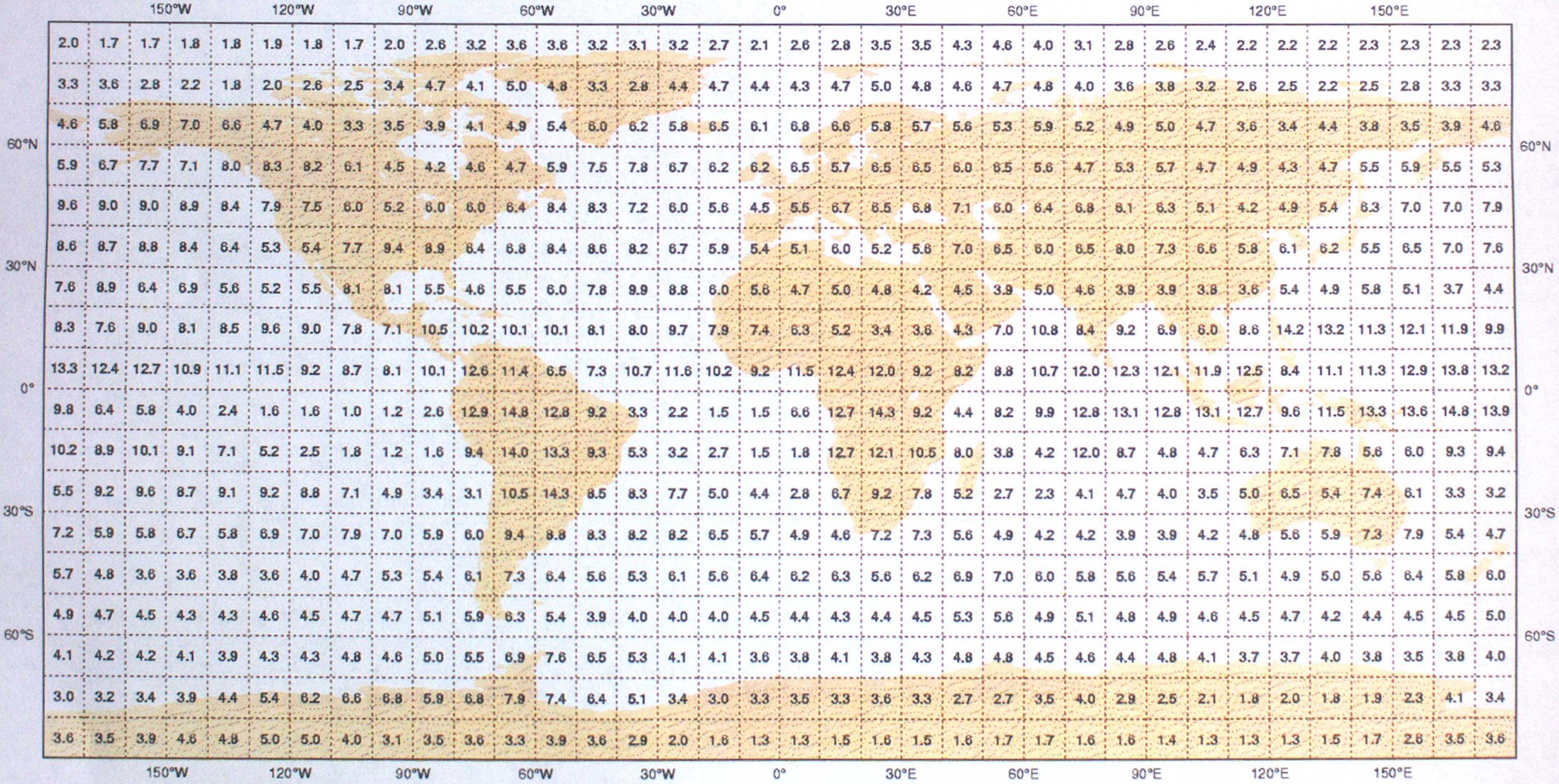
1.1	.8	.7	.8	.8	1.0	.9	.7	.9	1.2	1.5	2.1	2.0	1.7	1.5	1.6	1.5	1.2	1.8	2.0	2.5	2.5	3.1	3.2	2.6	1.9	1.7	1.5	1.3	1.1	1.1	1.2	1.3	1.3	1.3	1.3
2.3	2.5	1.8	1.2	1.0	1.2	1.6	1.6	2.2	3.1	2.6	3.2	3.1	2.0	1.7	2.7	3.5	3.4	3.2	3.6	3.7	3.5	3.3	3.3	3.3	2.7	2.2	2.4	2.0	1.5	1.4	1.3	1.5	1.6	2.0	2.1
3.1	3.9	4.6	4.6	4.5	3.1	2.9	2.5	2.7	3.0	2.8	3.3	3.8	4.4	5.0	4.8	5.4	5.0	5.4	5.0	4.2	4.1	3.9	3.8	4.3	3.9	3.7	3.6	3.4	2.6	2.3	2.9	2.2	2.1	2.2	2.9
4.3	4.9	5.8	5.6	6.6	6.8	6.2	4.7	3.6	3.4	3.6	3.5	4.8	6.3	6.9	5.9	5.6	5.3	5.1	4.4	4.7	4.5	4.6	4.9	4.3	3.5	3.7	3.7	3.1	3.1	2.7	3.3	3.7	3.9	3.7	4.0
8.0	7.8	7.8	7.9	7.7	7.0	6.2	4.9	4.6	5.2	5.3	5.6	7.6	7.5	6.7	5.2	4.7	3.6	4.8	5.5	5.4	5.8	5.5	4.9	5.3	5.4	4.6	4.3	3.3	2.8	3.6	4.3	5.2	6.2	6.0	6.6
7.5	7.4	7.7	8.0	5.8	4.4	5.0	6.8	8.2	8.4	6.0	6.1	7.5	7.8	7.4	5.9	5.3	5.0	5.0	5.3	4.5	5.2	6.6	6.4	5.5	5.3	5.7	5.4	5.3	5.0	5.7	6.2	5.6	6.6	6.9	6.9
7.3	8.4	5.6	5.8	4.3	4.1	5.1	6.9	6.8	4.6	3.9	4.6	5.1	7.2	9.0	7.9	5.6	5.2	4.5	4.0	3.4	3.3	4.0	3.1	4.2	4.4	3.0	3.1	3.4	3.7	5.1	4.7	5.4	4.8	3.7	4.2
7.9	6.7	7.4	7.2	7.2	8.0	8.0	6.9	6.0	9.5	9.0	9.0	9.4	7.2	6.9	8.8	7.3	6.4	4.2	3.0	2.0	3.0	3.5	5.7	9.7	7.4	8.1	5.7	4.9	7.1	12.4	11.5	9.9	11.1	10.9	9.1
12.0	11.2	11.3	9.9	9.8	10.2	8.2	7.8	7.0	9.2	11.1	9.7	5.4	6.7	10.1	10.6	9.2	7.7	9.8	10.4	10.5	7.8	7.5	8.5	9.9	11.3	11.7	10.9	10.4	10.8	7.3	9.9	10.2	11.8	12.6	12.1
8.6	5.2	4.6	2.8	1.4	.7	.8	.6	.6	2.0	11.3	12.2	10.3	7.3	2.4	1.4	1.1	1.0	5.8	11.0	12.0	8.0	4.1	7.6	9.3	11.9	12.3	11.5	11.5	11.1	8.5	10.3	11.9	12.3	13.4	12.2
9.6	8.4	9.5	8.2	6.5	4.7	1.8	1.2	.7	.8	8.4	12.0	11.2	8.4	4.9	2.7	1.8	.7	1.4	11.4	10.9	9.5	6.9	2.7	3.1	10.9	7.9	3.8	3.4	5.7	6.7	7.1	4.6	5.4	8.8	8.9
5.0	9.1	9.4	7.9	8.4	8.8	7.9	6.3	4.0	2.6	2.5	8.8	11.7	8.1	8.3	7.6	4.0	3.4	2.1	7.6	9.3	6.9	4.5	2.6	2.1	3.6	4.1	3.5	3.4	5.2	7.5	5.8	7.5	5.8	2.8	2.8
6.6	5.3	5.2	5.9	5.0	6.4	6.1	6.7	6.4	5.4	5.5	8.5	7.8	7.4	7.8	7.9	5.8	4.7	4.3	4.0	6.3	6.2	5.1	4.6	4.1	3.8	3.4	3.4	3.6	4.2	5.2	5.9	7.8	7.4	4.6	4.4
5.0	4.0	2.8	3.1	3.2	3.1	3.3	4.1	4.6	4.8	5.3	6.3	5.4	4.8	4.3	5.1	4.8	5.1	5.1	5.1	4.6	5.2	5.7	6.2	5.2	4.8	4.6	4.4	4.7	4.2	3.9	4.4	5.1	5.7	5.1	5.2
4.1	3.9	3.7	3.4	3.2	3.3	3.3	3.5	3.7	4.0	4.6	4.9	3.9	2.9	2.8	2.9	2.6	2.9	3.1	2.8	2.8	3.1	3.7	4.0	3.5	3.8	3.5	3.6	3.3	3.5	3.7	3.2	3.4	3.5	3.8	4.2
2.7	2.9	2.9	2.9	2.6	2.7	2.8	3.1	3.2	3.4	3.8	4.3	4.5	3.9	3.2	2.6	2.5	2.3	2.4	2.5	2.2	2.5	2.9	2.7	2.7	2.9	2.7	2.8	2.6	2.4	2.4	2.8	2.6	2.4	2.6	2.6
1.7	1.8	2.0	2.2	2.5	3.1	3.6	3.9	4.1	3.6	4.1	4.4	4.1	3.5	2.8	2.1	1.7	1.7	1.7	1.5	1.7	1.4	1.2	1.2	1.8	2.1	1.4	1.1	.9	.8	.9	.8	.9	1.2	2.2	1.9
1.6	1.6	1.8	2.2	2.3	2.6	2.5	2.0	1.6	1.8	1.8	1.6	1.9	1.8	1.4	.8	.6	.5	.6	.7	.7	.7	.6	.7	.7	.7	.6	.6	.6	.5	.5	.6	.7	1.2	1.9	1.8

Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



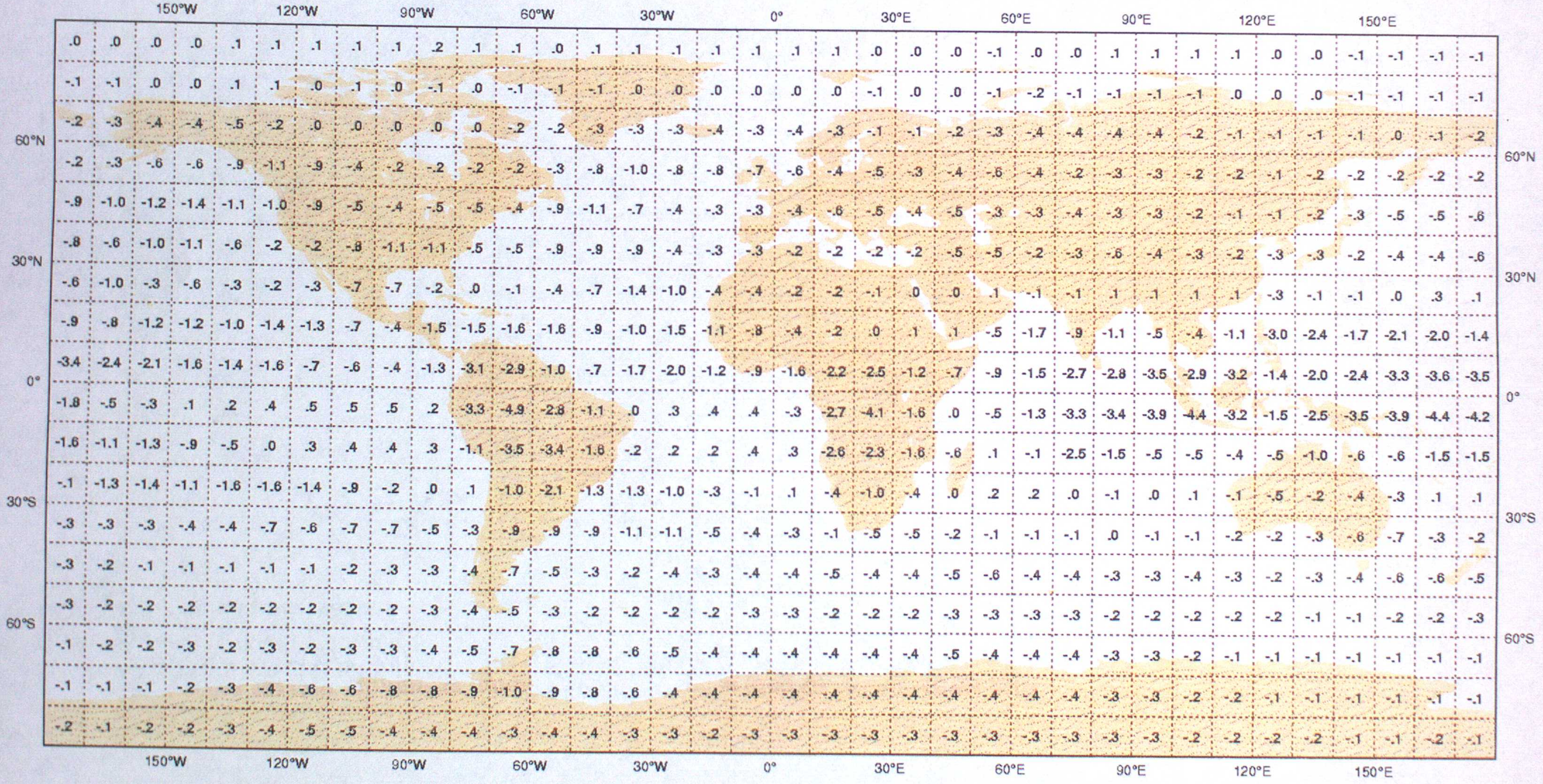
-2.9	-2.7	-2.6	-2.8	-2.8	-2.8	-2.7	-2.8	-2.9	-2.7	-2.5	-3.0	-2.9	-2.6	-2.0	-2.6	-3.0	-2.7	-3.2	-3.8	-4.1	-3.9	-4.3	-4.5	-4.0	-3.4	-3.4	-3.3	-3.1	-3.2	-3.4	-3.3	-3.4	-3.3	-3.4	-3.2
-2.9	-3.2	-2.7	-2.2	-2.0	-2.1	-2.5	-3.2	-3.8	-4.1	-3.6	-3.9	-4.1	-3.1	-2.3	-1.6	-3.8	-4.0	-4.5	-4.6	-5.1	-4.8	-4.6	-4.4	-4.4	-3.7	-3.6	-3.7	-3.3	-2.9	-2.8	-2.8	-3.1	-3.1	-3.3	-3.0
-3.8	-4.6	-5.4	-5.2	-4.4	-3.2	-2.9	-2.6	-2.9	-3.1	-3.5	-4.3	-4.6	-4.4	-3.9	-4.0	-4.9	-4.6	-5.6	-5.3	-3.6	-3.9	-3.9	-4.0	-4.6	-4.6	-5.2	-4.8	-4.0	-3.2	-3.2	-2.8	-2.2	-2.3	-2.9	-3.6
-4.1	-4.3	-5.6	-5.7	-6.6	-7.3	-6.0	-3.8	-3.0	-3.5	-4.0	-3.5	-3.9	-5.7	-5.7	-4.3	-4.3	-4.2	-4.2	-3.5	-4.5	-3.4	-3.7	-4.6	-3.5	-2.7	-3.5	-4.1	-3.1	-3.0	-2.5	-3.0	-3.7	-4.1	-3.9	-3.7
-6.3	-5.9	-6.9	-7.1	-5.7	-5.2	-5.0	-3.5	-3.0	-3.9	-3.9	-3.0	-4.9	-5.8	-3.7	-2.0	-1.8	-1.8	-2.8	-4.1	-3.8	-3.3	-4.2	-2.5	-3.0	-3.4	-2.3	-1.7	-1.2	-.6	-1.0	-1.7	-3.2	-3.9	-4.0	-4.6
-3.8	-4.0	-5.0	-4.9	-2.5	-1.3	-1.8	-4.4	-5.1	-4.5	-2.4	-2.6	-3.2	-3.9	-4.2	-2.6	-2.2	-2.4	-2.1	-2.0	-1.7	-2.0	-3.5	-3.5	-2.8	-2.3	-2.2	-2.8	-2.2	-1.2	-2.1	-2.2	-1.6	-3.0	-3.2	-3.3
-2.7	-4.2	-1.7	-2.3	-1.5	-1.3	-1.7	-3.1	-2.8	-.9	-.4	-.7	-1.5	-2.9	-5.4	-4.4	-2.1	-2.2	-1.8	-2.0	-1.8	-1.4	-1.1	-.4	-1.5	-1.6	.3	-.1	.3	.2	-.6	-.5	-.7	-1.0	.1	.0
-2.7	-2.2	-3.5	-3.1	-3.0	-3.8	-3.8	-2.5	-1.8	-3.9	-3.7	-3.9	-4.4	-2.8	-2.9	-4.5	-4.4	-4.2	-2.9	-3.3	-1.3	.4	.0	-1.9	-4.6	-2.5	-2.6	-1.3	-1.1	-1.7	-7.7	-5.7	-4.0	-5.6	-5.5	-4.5
-8.7	-6.4	-6.1	-4.8	-4.3	-5.3	-2.9	-2.5	-1.7	-3.8	-9.0	-8.1	-2.2	-1.5	-4.6	-6.0	-4.4	-3.3	-4.9	-6.6	-6.2	-2.8	-2.3	-2.8	-4.3	-7.7	-7.6	-9.0	-7.7	-8.8	-3.3	-4.2	-6.0	-8.3	-8.8	-9.3
-4.9	-1.9	-1.1	-.2	.2	.4	.6	.9	.7	.7	-8.5	-13.3	-7.2	-4.0	-.7	.3	.6	1.0	-1.1	-7.6	-11.2	-4.7	-.2	-2.1	-3.9	-9.1	-9.2	-10.2	-11.0	-7.6	-3.5	-6.8	-9.5	-10.1	-11.0	-10.8
-4.8	-3.2	-3.7	-2.9	-1.8	-.3	.6	.9	.9	.7	-3.3	-9.8	-10.1	-6.1	-1.2	.1	.3	1.0	.5	-7.8	-7.4	-5.3	-2.4	-.1	-.1	-6.4	-3.9	-1.1	-1.1	-1.1	-2.8	-3.7	-2.3	-1.5	-4.1	-4.4
-1.2	-4.6	-5.5	-4.7	-6.2	-6.2	-5.1	-3.2	-.9	.2	.6	-3.3	-7.2	-4.6	-4.4	-3.8	-1.1	-.3	.3	-2.2	-4.4	-2.3	-.4	.3	.5	-.2	-.8	-.3	-.1	-1.4	-3.3	-2.3	-2.9	-2.2	-.4	-.1
-2.7	-1.9	-1.7	-2.8	-2.4	-3.4	-3.1	-3.7	-3.5	-2.4	-2.0	-4.6	-4.8	-4.2	-4.4	-4.7	-2.4	-1.8	-1.2	-.6	-2.3	-2.4	-1.3	-1.0	-.7	-.7	-.6	-.7	-.7	-1.4	-1.5	-2.0	-3.7	-3.8	-1.9	-1.2
-2.9	-1.8	-.7	-1.1	-1.3	-.9	-1.4	-1.8	-2.0	-2.3	-3.1	-4.1	-3.1	-2.3	-2.1	-3.4	-2.9	-3.4	-3.3	-3.6	-2.9	-3.1	-3.5	-3.8	-3.2	-2.9	-2.9	-2.6	-3.1	-2.8	-2.1	-2.0	-2.8	-3.8	-3.8	-3.0
-3.2	-2.9	-2.7	-2.7	-2.5	-2.7	-2.8	-2.8	-2.8	-3.0	-3.8	-3.9	-2.7	-1.9	-2.4	-3.0	-2.8	-3.6	-3.7	-3.5	-3.7	-3.7	-4.1	-4.3	-4.0	-4.1	-3.3	-3.2	-3.1	-3.1	-3.3	-2.6	-2.7	-2.8	-3.0	-3.0
-3.4	-3.9	-3.8	-4.1	-3.8	-4.0	-3.9	-4.2	-3.9	-4.2	-5.0	-6.0	-5.7	-5.3	-4.6	-4.2	-3.6	-3.6	-3.7	-3.9	-4.0	-4.6	-4.7	-4.0	-4.7	-4.8	-4.0	-3.9	-2.7	-2.6	-2.8	-2.9	-3.0	-3.3	-3.6	-3.3
-3.0	-3.3	-3.3	-3.5	-4.0	-4.8	-5.9	-6.1	-6.7	-6.3	-7.0	-7.5	-6.4	-5.0	-4.2	-3.0	-2.4	-2.3	-2.4	-2.6	-2.5	-2.1	-2.6	-2.9	-2.6	-2.7	-2.1	-2.2	-2.3	-2.0	-1.5	-1.0	-1.3	-1.6	-2.3	-2.9
-2.4	-2.7	-2.8	-2.9	-2.9	-3.4	-3.7	-3.8	-3.1	-2.6	-2.6	-2.5	-2.5	-2.0	-1.6	-.8	-.9	-1.4	-1.8	-2.1	-1.8	-1.9	-2.4	-2.7	-2.8	-2.8	-2.8	-2.5	-2.1	-1.6	-1.3	-1.3	-1.5	-.9	-2.0	-2.3

Figure 46. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



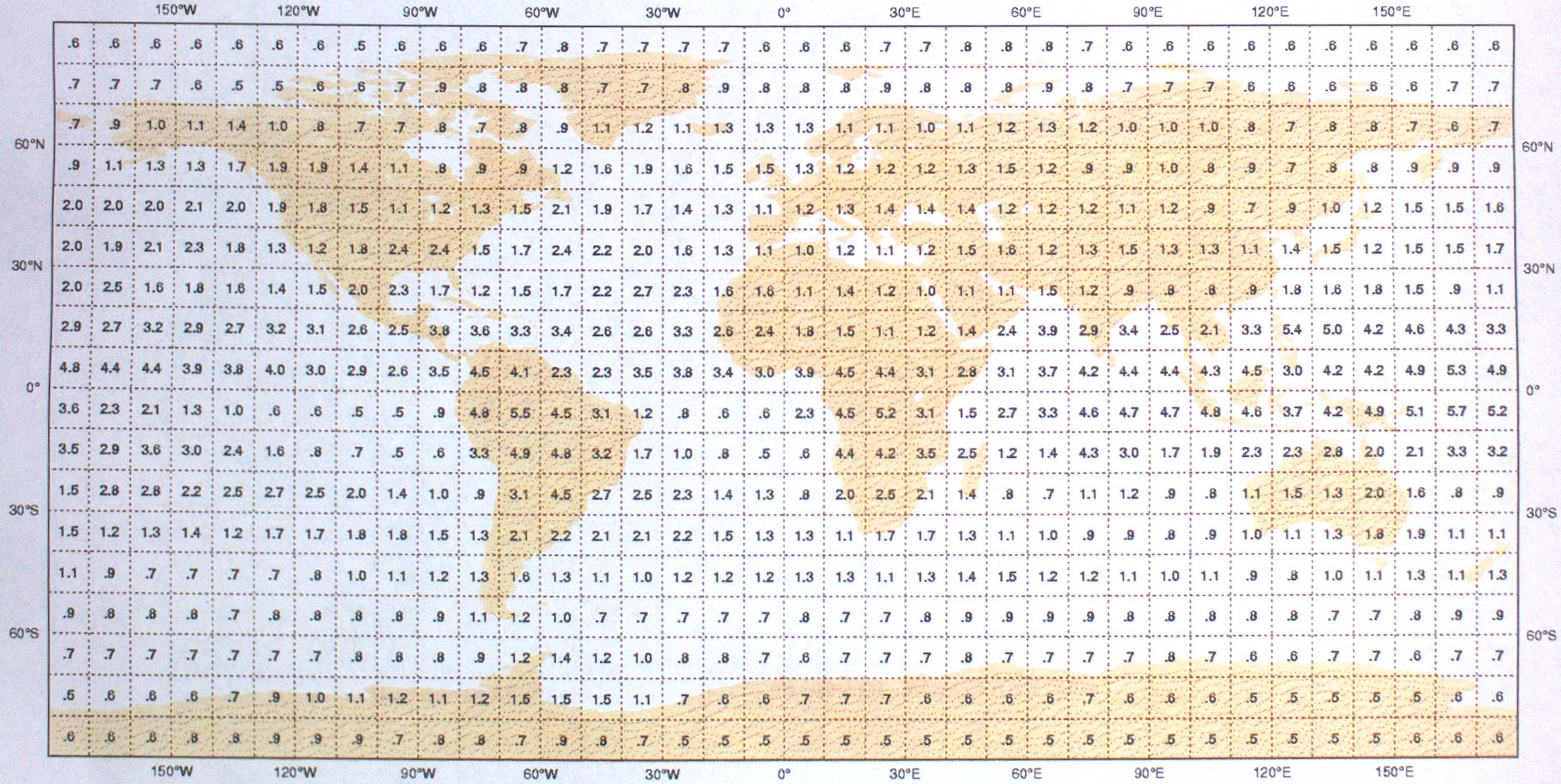
2.0	1.7	1.7	1.8	1.8	1.9	1.8	1.7	2.0	2.6	3.2	3.6	3.6	3.2	3.1	3.2	2.7	2.1	2.6	2.8	3.5	3.5	4.3	4.6	4.0	3.1	2.8	2.6	2.4	2.2	2.2	2.2	2.3	2.3	2.3	2.3
3.3	3.6	2.8	2.2	1.8	2.0	2.6	2.5	3.4	4.7	4.1	5.0	4.8	3.3	2.8	4.4	4.7	4.4	4.3	4.7	5.0	4.8	4.6	4.7	4.8	4.0	3.6	3.8	3.2	2.6	2.5	2.2	2.5	2.8	3.3	3.3
4.6	5.8	6.9	7.0	6.6	4.7	4.0	3.3	3.5	3.9	4.1	4.9	5.4	6.0	6.2	5.8	6.5	6.1	6.8	6.6	5.8	5.7	5.6	5.3	5.9	5.2	4.9	5.0	4.7	3.6	3.4	4.4	3.8	3.5	3.9	4.6
5.9	6.7	7.7	7.1	8.0	8.3	8.2	6.1	4.5	4.2	4.6	4.7	5.9	7.5	7.8	6.7	6.2	6.2	6.5	5.7	6.5	6.5	6.0	6.5	5.6	4.7	5.3	5.7	4.7	4.9	4.3	4.7	5.5	5.9	5.5	5.3
9.6	9.0	9.0	8.9	8.4	7.9	7.5	6.0	5.2	6.0	6.0	6.4	8.4	8.3	7.2	6.0	5.6	4.5	5.5	6.7	6.5	6.8	7.1	6.0	6.4	6.8	6.1	6.3	5.1	4.2	4.9	5.4	6.3	7.0	7.0	7.9
8.6	8.7	8.8	8.4	6.4	5.3	5.4	7.7	9.4	8.9	6.4	6.8	8.4	8.6	8.2	6.7	5.9	5.4	5.1	6.0	5.2	5.6	7.0	6.5	6.0	6.5	8.0	7.3	6.6	5.8	6.1	6.2	5.5	6.5	7.0	7.6
7.6	8.9	6.4	6.9	5.6	5.2	5.5	8.1	8.1	5.5	4.6	5.5	6.0	7.8	9.9	8.8	6.0	5.6	4.7	5.0	4.8	4.2	4.5	3.9	5.0	4.6	3.9	3.9	3.8	3.6	5.4	4.9	5.8	5.1	3.7	4.4
8.3	7.6	9.0	8.1	8.5	9.6	9.0	7.8	7.1	10.5	10.2	10.1	10.1	8.1	8.0	9.7	7.9	7.4	6.3	5.2	3.4	3.6	4.3	7.0	10.8	8.4	9.2	6.9	6.0	8.6	14.2	13.2	11.3	12.1	11.9	9.9
13.3	12.4	12.7	10.9	11.1	11.5	9.2	8.7	8.1	10.1	12.6	11.4	6.5	7.3	10.7	11.6	10.2	9.2	11.5	12.4	12.0	9.2	8.2	8.8	10.7	12.0	12.3	12.1	11.9	12.5	8.4	11.1	11.3	12.9	13.8	13.2
9.8	6.4	5.8	4.0	2.4	1.6	1.6	1.0	1.2	2.6	12.9	14.8	12.8	9.2	3.3	2.2	1.5	1.5	6.6	12.7	14.3	9.2	4.4	8.2	9.9	12.8	13.1	12.8	13.1	12.7	9.6	11.5	13.3	13.6	14.8	13.9
10.2	8.9	10.1	9.1	7.1	5.2	2.5	1.8	1.2	1.6	9.4	14.0	13.3	9.3	5.3	3.2	2.7	1.5	1.8	12.7	12.1	10.5	8.0	3.8	4.2	12.0	8.7	4.8	4.7	6.3	7.1	7.8	5.6	6.0	9.3	9.4
5.5	9.2	9.6	8.7	9.1	9.2	8.8	7.1	4.9	3.4	3.1	10.5	14.3	8.5	8.3	7.7	5.0	4.4	2.8	6.7	9.2	7.8	5.2	2.7	2.3	4.1	4.7	4.0	3.5	5.0	6.5	5.4	7.4	6.1	3.3	3.2
7.2	5.9	5.8	6.7	5.8	6.9	7.0	7.9	7.0	5.9	6.0	9.4	8.8	8.3	8.2	8.2	6.5	5.7	4.9	4.6	7.2	7.3	5.6	4.9	4.2	4.2	3.9	3.9	4.2	4.8	5.6	5.9	7.3	7.9	5.4	4.7
5.7	4.8	3.6	3.6	3.8	3.6	4.0	4.7	5.3	5.4	6.1	7.3	6.4	5.6	5.3	6.1	5.6	6.4	6.2	6.3	5.6	6.2	6.9	7.0	6.0	5.8	5.6	5.4	5.7	5.1	4.9	5.0	5.6	6.4	5.8	6.0
4.9	4.7	4.5	4.3	4.3	4.6	4.5	4.7	4.7	5.1	5.9	6.3	5.4	3.9	4.0	4.0	4.0	4.5	4.4	4.3	4.4	4.5	5.3	5.6	4.9	5.1	4.8	4.9	4.6	4.5	4.7	4.2	4.4	4.5	4.5	5.0
4.1	4.2	4.2	4.1	3.9	4.3	4.3	4.8	4.6	5.0	5.5	6.9	7.6	6.5	5.3	4.1	4.1	3.6	3.8	4.1	3.8	4.3	4.8	4.8	4.5	4.6	4.4	4.8	4.1	3.7	3.7	4.0	3.8	3.5	3.8	4.0
3.0	3.2	3.4	3.9	4.4	5.4	6.2	6.6	6.8	5.9	6.8	7.9	7.4	6.4	5.1	3.4	3.0	3.3	3.5	3.3	3.6	3.3	2.7	2.7	3.5	4.0	2.9	2.5	2.1	1.8	2.0	1.8	1.9	2.3	4.1	3.4
3.6	3.5	3.9	4.6	4.8	5.0	5.0	4.0	3.1	3.5	3.6	3.3	3.9	3.6	2.9	2.0	1.6	1.3	1.3	1.5	1.6	1.5	1.6	1.7	1.7	1.6	1.6	1.4	1.3	1.3	1.3	1.5	1.7	2.6	3.5	3.6

Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



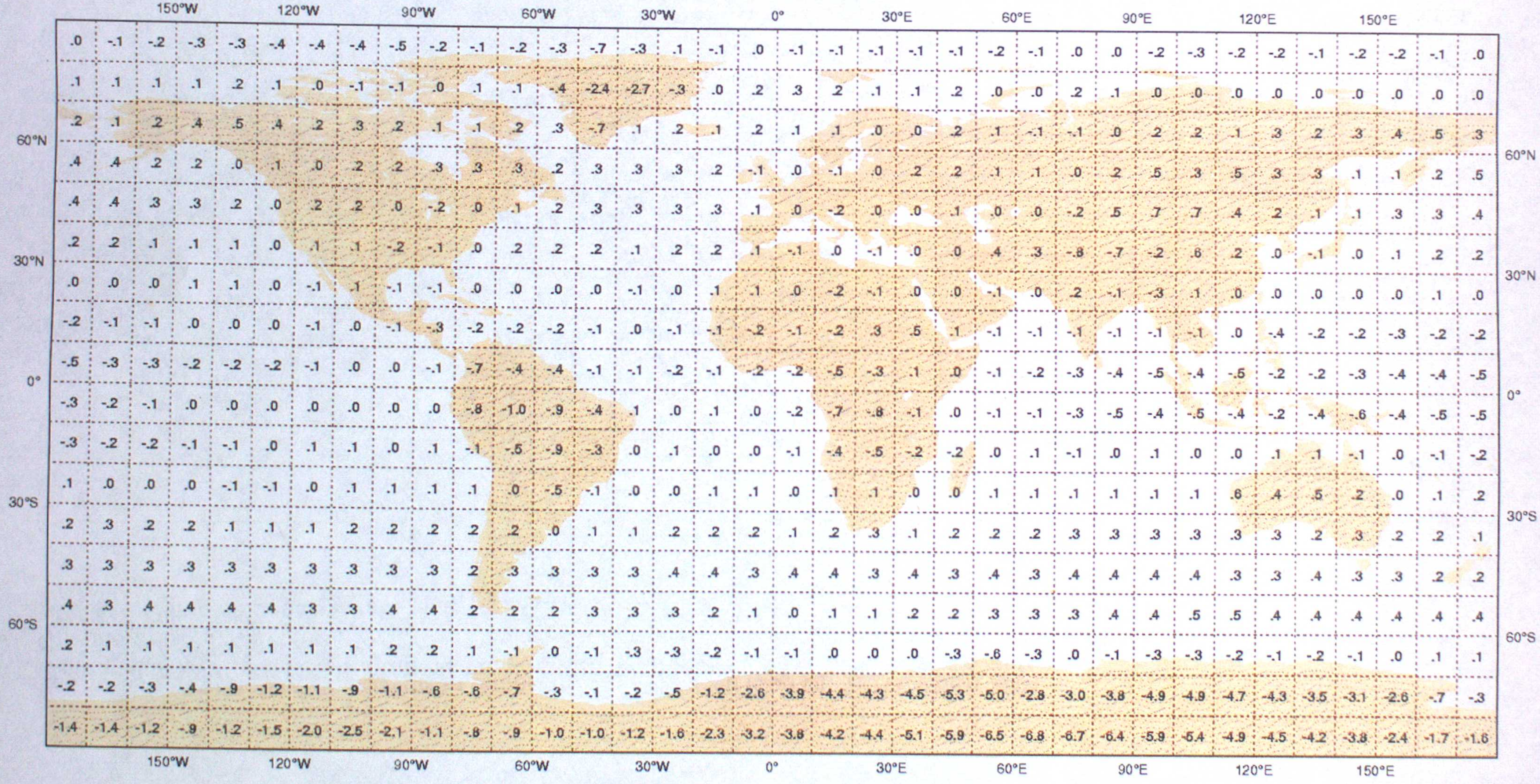
.0	.0	.0	.0	.1	.1	.1	.1	.1	.2	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.0	.0	.0	-.1	.0	.0	.1	.1	.1	.1	.0	.0	-.1	-.1	-.1	-.1
-.1	-.1	.0	.0	.1	.1	.0	.1	.0	-.1	.0	-.1	-.1	-.1	.0	.0	.0	.0	.0	.0	-.1	.0	.0	-.1	-.2	-.1	-.1	-.1	-.1	.0	.0	.0	-.1	-.1	-.1	-.1
-.2	-.3	-.4	-.4	-.5	-.2	.0	.0	.0	.0	.0	-.2	-.2	-.3	-.3	-.3	-.4	-.3	-.4	-.3	-.1	-.1	-.2	-.3	-.4	-.4	-.4	-.4	-.2	-.1	-.1	-.1	-.1	.0	-.1	-.2
-.2	-.3	-.6	-.6	-.9	-1.1	-.9	-.4	-.2	-.2	-.2	-.2	-.3	-.8	-1.0	-.8	-.8	-.7	-.6	-.4	-.5	-.3	-.4	-.6	-.4	-.2	-.3	-.3	-.2	-.2	-.1	-.2	-.2	-.2	-.2	-.2
-.9	-1.0	-1.2	-1.4	-1.1	-1.0	-.9	-.5	-.4	-.5	-.5	-.4	-.9	-1.1	-.7	-.4	-.3	-.3	-.4	-.6	-.5	-.4	-.5	-.3	-.3	-.4	-.3	-.3	-.2	-.1	-.1	-.2	-.3	-.5	-.5	-.6
-.8	-.6	-1.0	-1.1	-.6	-.2	-.2	-.8	-1.1	-1.1	-.5	-.5	-.9	-.9	-.9	-.4	-.3	-.3	-.2	-.2	-.2	-.2	-.5	-.5	-.2	-.3	-.6	-.4	-.3	-.2	-.3	-.3	-.2	-.4	-.4	-.6
-.6	-1.0	-.3	-.6	-.3	-.2	-.3	-.7	-.7	-.2	.0	-.1	-.4	-.7	-1.4	-1.0	-.4	-.4	-.2	-.2	-.1	.0	.0	.1	-.1	-.1	.1	.1	.1	.1	-.3	-.1	-.1	.0	.3	.1
-.9	-.8	-1.2	-1.2	-1.0	-1.4	-1.3	-.7	-.4	-1.5	-1.5	-1.6	-1.6	-.9	-1.0	-1.5	-1.1	-.8	-.4	-.2	.0	.1	.1	-.5	-1.7	-.9	-1.1	-.5	-.4	-1.1	-3.0	-2.4	-1.7	-2.1	-2.0	-1.4
-3.4	-2.4	-2.1	-1.6	-1.4	-1.6	-.7	-.6	-.4	-1.3	-3.1	-2.9	-1.0	-.7	-1.7	-2.0	-1.2	-.9	-1.6	-2.2	-2.5	-1.2	-.7	-.9	-1.5	-2.7	-2.8	-3.5	-2.9	-3.2	-1.4	-2.0	-2.4	-3.3	-3.6	-3.5
-1.8	-.5	-.3	.1	.2	.4	.5	.5	.5	.2	-3.3	-4.9	-2.8	-1.1	.0	.3	.4	.4	-.3	-2.7	-4.1	-1.6	.0	-.5	-1.3	-3.3	-3.4	-3.9	-4.4	-3.2	-1.5	-2.5	-3.5	-3.9	-4.4	-4.2
-1.6	-1.1	-1.3	-.9	-.5	.0	.3	.4	.4	.3	-1.1	-3.5	-3.4	-1.6	-.2	.2	.2	.4	.3	-2.6	-2.3	-1.6	-.6	.1	-.1	-2.5	-1.5	-.5	-.5	-.4	-.5	-1.0	-.6	-.6	-1.5	-1.5
-.1	-1.3	-1.4	-1.1	-1.6	-1.6	-1.4	-.9	-.2	.0	.1	-1.0	-2.1	-1.3	-1.3	-1.0	-.3	-.1	.1	-.4	-1.0	-.4	.0	.2	.2	.0	-.1	.0	.1	-.1	-.5	-.2	-.4	-.3	.1	.1
-.3	-.3	-.3	-.4	-.4	-.7	-.6	-.7	-.7	-.5	-.3	-.9	-.9	-.9	-1.1	-1.1	-.5	-.4	-.3	-.1	-.5	-.5	-.2	-.1	-.1	-.1	.0	-.1	-.1	-.2	-.2	-.3	-.6	-.7	-.3	-.2
-.3	-.2	-.1	-.1	-.1	-.1	-.1	-.2	-.3	-.3	-.4	-.7	-.5	-.3	-.2	-.4	-.3	-.4	-.4	-.5	-.4	-.4	-.5	-.6	-.4	-.4	-.3	-.3	-.4	-.3	-.2	-.3	-.4	-.6	-.6	-.5
-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.4	-.5	-.3	-.2	-.2	-.2	-.2	-.3	-.3	-.2	-.2	-.2	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.2	-.2	-.3
-.1	-.2	-.2	-.3	-.2	-.3	-.2	-.3	-.3	-.4	-.5	-.7	-.8	-.8	-.6	-.5	-.4	-.4	-.4	-.4	-.4	-.4	-.5	-.4	-.4	-.4	-.3	-.3	-.2	-.1	-.1	-.1	-.1	-.1	-.1	-.1
-.1	-.1	-.1	-.2	-.3	-.4	-.6	-.6	-.8	-.8	-.9	-1.0	-.9	-.8	-.6	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.2	-.2	-.1	-.1	-.1	-.1	-.1	-.1
-.2	-.1	-.2	-.2	-.3	-.4	-.5	-.5	-.4	-.4	-.4	-.3	-.4	-.4	-.3	-.3	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.1	-.1	-.2	-.1

Figure 48. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



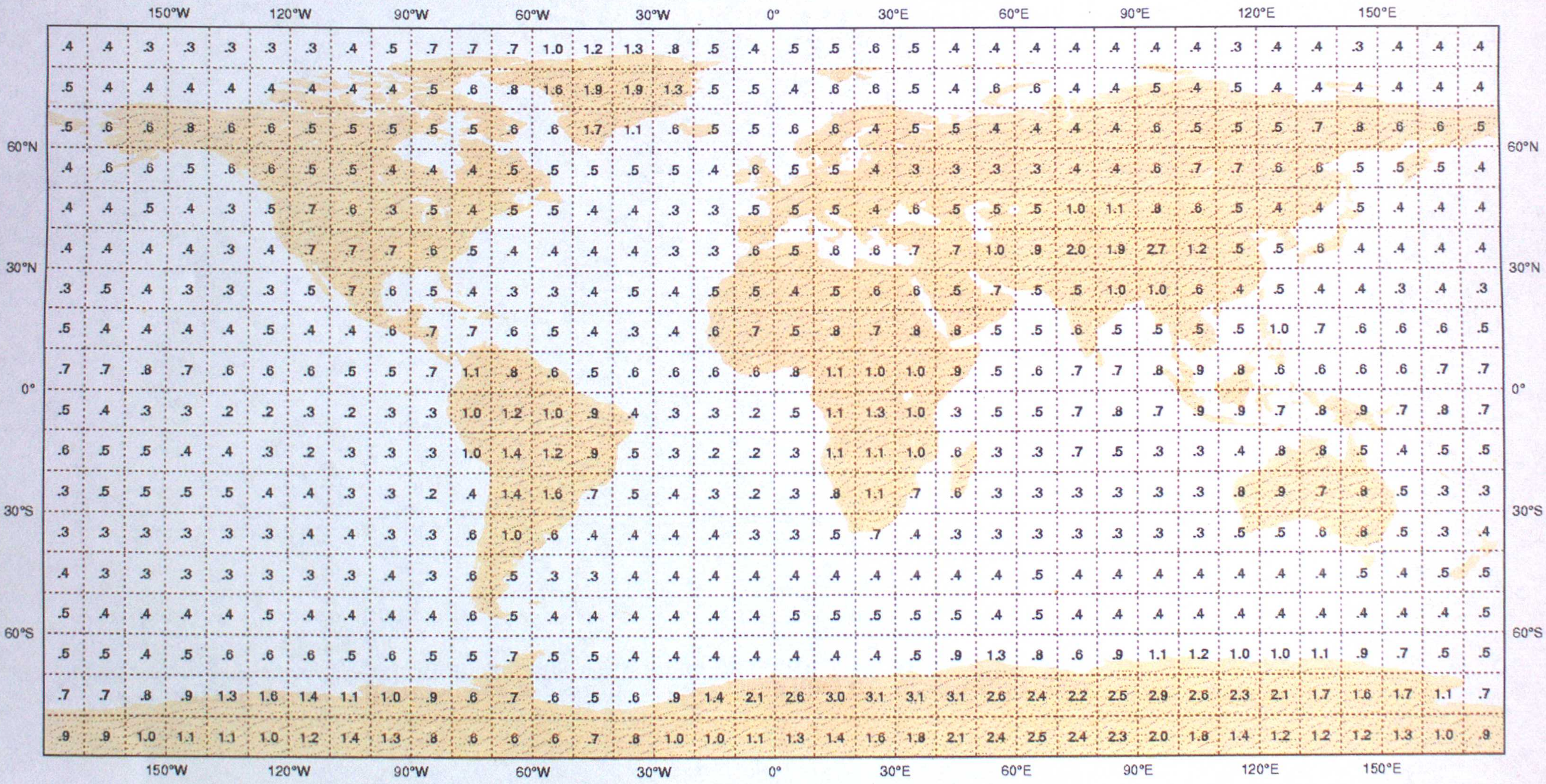
.6	.6	.6	.6	.6	.6	.6	.5	.6	.6	.6	.7	.8	.7	.7	.7	.7	.6	.6	.6	.7	.7	.8	.8	.8	.7	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
.7	.7	.7	.6	.5	.5	.6	.6	.7	.9	.8	.8	.8	.7	.7	.8	.9	.8	.8	.8	.9	.8	.8	.8	.9	.8	.7	.7	.7	.6	.6	.6	.6	.6	.7	.7
.7	.9	1.0	1.1	1.4	1.0	.8	.7	.7	.8	.7	.8	.9	1.1	1.2	1.1	1.3	1.3	1.3	1.1	1.1	1.0	1.1	1.2	1.3	1.2	1.0	1.0	1.0	.8	.7	.8	.8	.7	.6	.7
.9	1.1	1.3	1.3	1.7	1.9	1.9	1.4	1.1	.8	.9	.9	1.2	1.6	1.9	1.6	1.5	1.5	1.3	1.2	1.2	1.2	1.3	1.5	1.2	.9	.9	1.0	.8	.9	.7	.8	.8	.9	.9	.9
2.0	2.0	2.0	2.1	2.0	1.9	1.8	1.5	1.1	1.2	1.3	1.5	2.1	1.9	1.7	1.4	1.3	1.1	1.2	1.3	1.4	1.4	1.4	1.2	1.2	1.2	1.1	1.2	.9	.7	.9	1.0	1.2	1.5	1.5	1.6
2.0	1.9	2.1	2.3	1.8	1.3	1.2	1.8	2.4	2.4	1.5	1.7	2.4	2.2	2.0	1.6	1.3	1.1	1.0	1.2	1.1	1.2	1.5	1.6	1.2	1.3	1.5	1.3	1.3	1.1	1.4	1.5	1.2	1.5	1.5	1.7
2.0	2.5	1.6	1.8	1.6	1.4	1.5	2.0	2.3	1.7	1.2	1.5	1.7	2.2	2.7	2.3	1.6	1.6	1.1	1.4	1.2	1.0	1.1	1.1	1.5	1.2	.9	.8	.8	.9	1.8	1.6	1.8	1.5	.9	1.1
2.9	2.7	3.2	2.9	2.7	3.2	3.1	2.6	2.5	3.8	3.6	3.3	3.4	2.6	2.6	3.3	2.6	2.4	1.8	1.5	1.1	1.2	1.4	2.4	3.9	2.9	3.4	2.5	2.1	3.3	5.4	5.0	4.2	4.6	4.3	3.3
4.8	4.4	4.4	3.9	3.8	4.0	3.0	2.9	2.6	3.5	4.5	4.1	2.3	2.3	3.5	3.8	3.4	3.0	3.9	4.5	4.4	3.1	2.8	3.1	3.7	4.2	4.4	4.4	4.3	4.5	3.0	4.2	4.2	4.9	5.3	4.9
3.6	2.3	2.1	1.3	1.0	.6	.6	.5	.5	.9	4.8	5.5	4.5	3.1	1.2	.8	.6	.6	2.3	4.5	5.2	3.1	1.5	2.7	3.3	4.6	4.7	4.7	4.8	4.6	3.7	4.2	4.9	5.1	5.7	5.2
3.5	2.9	3.6	3.0	2.4	1.6	.8	.7	.5	.6	3.3	4.9	4.8	3.2	1.7	1.0	.8	.5	.6	4.4	4.2	3.5	2.5	1.2	1.4	4.3	3.0	1.7	1.9	2.3	2.3	2.8	2.0	2.1	3.3	3.2
1.5	2.8	2.8	2.2	2.5	2.7	2.5	2.0	1.4	1.0	.9	3.1	4.5	2.7	2.5	2.3	1.4	1.3	.8	2.0	2.5	2.1	1.4	.8	.7	1.1	1.2	.9	.8	1.1	1.5	1.3	2.0	1.6	.8	.9
1.5	1.2	1.3	1.4	1.2	1.7	1.7	1.8	1.8	1.5	1.3	2.1	2.2	2.1	2.1	2.2	1.5	1.3	1.3	1.1	1.7	1.7	1.3	1.1	1.0	.9	.9	.8	.9	1.0	1.1	1.3	1.8	1.9	1.1	1.1
1.1	.9	.7	.7	.7	.7	.8	1.0	1.1	1.2	1.3	1.6	1.3	1.1	1.0	1.2	1.2	1.2	1.3	1.3	1.1	1.3	1.4	1.5	1.2	1.2	1.1	1.0	1.1	.9	.8	1.0	1.1	1.3	1.1	1.3
.9	.8	.8	.8	.7	.8	.8	.8	.8	.9	1.1	1.2	1.0	.7	.7	.7	.7	.7	.8	.7	.7	.8	.9	.9	.9	.9	.8	.8	.8	.8	.8	.7	.7	.8	.9	.9
.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.9	1.2	1.4	1.2	1.0	.8	.8	.7	.6	.7	.7	.7	.8	.7	.7	.7	.7	.8	.7	.6	.6	.7	.7	.6	.7	.7
.5	.6	.6	.6	.7	.9	1.0	1.1	1.2	1.1	1.2	1.5	1.5	1.5	1.1	.7	.6	.6	.7	.7	.7	.6	.6	.6	.6	.7	.6	.6	.6	.5	.5	.5	.5	.5	.6	.6
.6	.6	.6	.8	.8	.9	.9	.9	.7	.8	.8	.7	.9	.8	.7	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6

Figure 49. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations



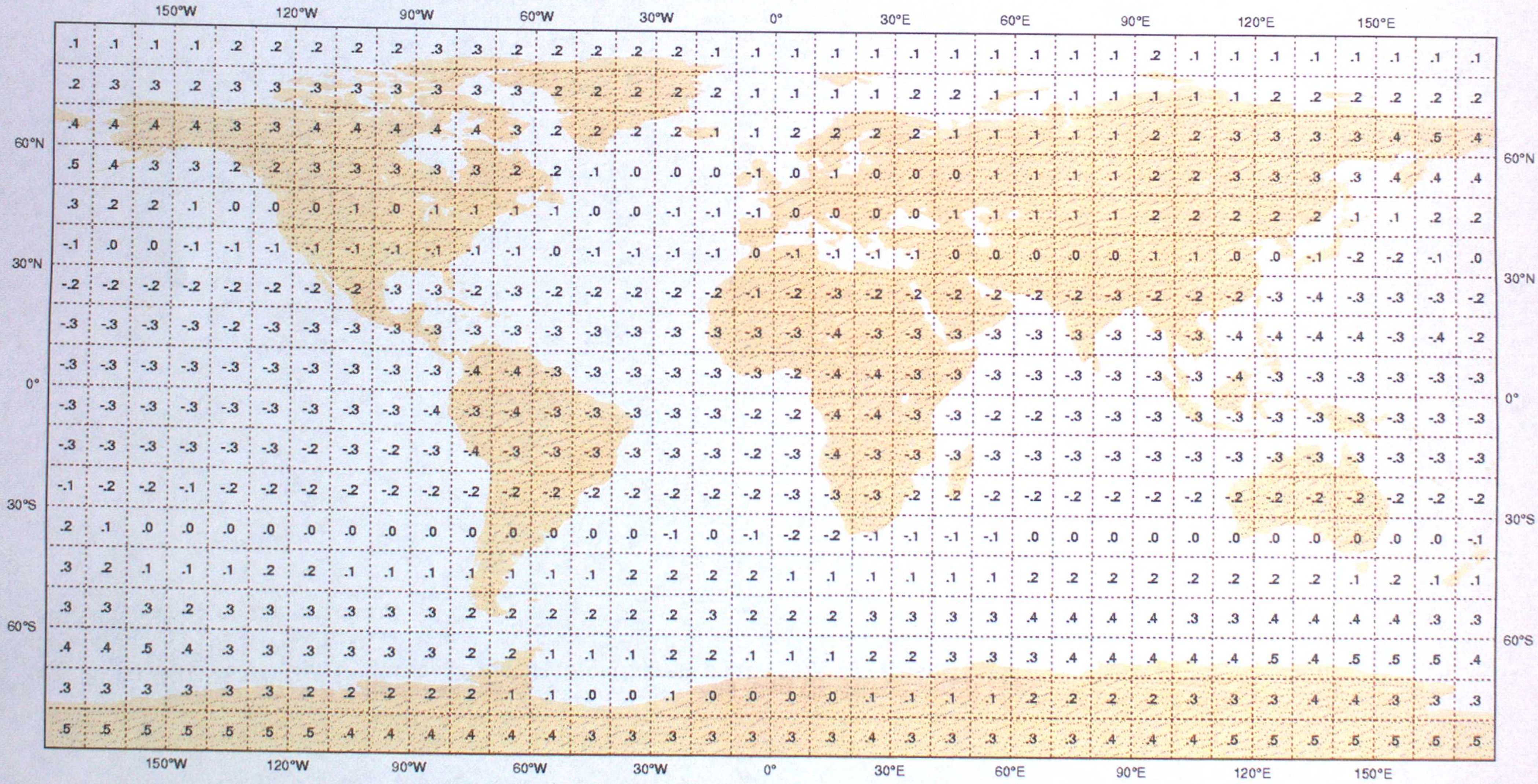
.0	-.1	-.2	-.3	-.3	-.4	-.4	-.4	-.5	-.2	-.1	-.2	-.3	-.7	-.3	.1	-.1	.0	-.1	-.1	-.1	-.1	-.1	-.2	-.1	.0	.0	-.2	-.3	-.2	-.2	-.1	-.2	-.2	-.1	.0
.1	.1	.1	.1	.2	.1	.0	-.1	-.1	.0	.1	.1	-.4	-2.4	-2.7	-.3	.0	.2	.3	.2	.1	.1	.2	.0	.0	.2	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
.2	.1	.2	.4	.5	.4	.2	.3	.2	.1	.1	.2	.3	-.7	.1	.2	.1	.2	.1	.1	.0	.0	.2	.1	-.1	-.1	.0	.2	.2	.1	.3	.2	.3	.4	.5	.3
.4	.4	.2	.2	.0	.1	.0	.2	.2	.3	.3	.3	.2	.3	.3	.3	.2	-.1	.0	-.1	.0	.2	.2	.1	.1	.0	.2	.5	.3	.5	.3	.3	.1	.1	.2	.5
.4	.4	.3	.3	.2	.0	.2	.2	.0	-.2	.0	.1	.2	.3	.3	.3	.3	.1	.0	-.2	.0	.0	.1	.0	.0	-.2	.5	.7	.7	.4	.2	.1	.1	.3	.3	.4
.2	.2	.1	.1	.1	.0	.1	.1	-.2	-.1	.0	.2	.2	.2	.1	.2	.2	.1	-.1	.0	-.1	.0	.0	.4	.3	-.8	-.7	-.2	.6	.2	.0	-.1	.0	.1	.2	.2
.0	.0	.0	.1	.1	.0	-.1	.1	-.1	-.1	.0	.0	.0	.0	-.1	.0	.1	.1	.0	-.2	-.1	.0	.0	-.1	.0	.2	-.1	-.3	.1	.0	.0	.0	.0	.0	.1	.0
-.2	-.1	-.1	.0	.0	.0	-.1	.0	-.1	-.3	-.2	-.2	-.2	-.1	.0	-.1	-.1	-.2	-.1	-.2	.3	.5	.1	-.1	-.1	-.1	-.1	-.1	-.1	.0	-.4	-.2	-.2	-.3	-.2	-.2
-.5	-.3	-.3	-.2	-.2	-.2	-.1	.0	.0	-.1	-.7	-.4	-.4	-.1	-.1	-.2	-.1	-.2	-.2	-.5	-.3	.1	.0	-.1	-.2	-.3	-.4	-.5	-.4	-.5	-.2	-.2	-.3	-.4	-.4	-.5
-.3	-.2	-.1	.0	.0	.0	.0	.0	.0	.0	-.8	-1.0	-.9	-.4	.1	.0	.1	.0	-.2	-.7	-.8	-.1	.0	-.1	-.1	-.3	-.5	-.4	-.5	-.4	-.2	-.4	-.6	-.4	-.5	-.5
-.3	-.2	-.2	-.1	-.1	.0	.1	.1	.0	.1	-.1	-.5	-.9	-.3	.0	.1	.0	.0	-.1	-.4	-.5	-.2	-.2	.0	.1	-.1	.0	.1	.0	.0	.1	.1	-.1	.0	-.1	-.2
.1	.0	.0	.0	-.1	-.1	.0	.1	.1	.1	.1	.0	-.5	-.1	.0	.0	.1	.1	.0	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.6	.4	.5	.2	.0	.1	.2
.2	.3	.2	.2	.1	.1	.1	.2	.2	.2	.2	.2	.0	.1	.1	.2	.2	.2	.1	.2	.3	.1	.2	.2	.2	.3	.3	.3	.3	.3	.3	.2	.3	.2	.2	.1
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.3	.3	.3	.3	.4	.4	.3	.4	.4	.3	.4	.3	.4	.3	.4	.4	.4	.4	.3	.3	.4	.3	.3	.2	.2
.4	.3	.4	.4	.4	.4	.3	.3	.4	.4	.2	.2	.2	.3	.3	.3	.2	.1	.0	.1	.1	.2	.2	.3	.3	.3	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4
.2	.1	.1	.1	.1	.1	.1	.1	.2	.2	.1	-.1	.0	-.1	-.3	-.3	-.2	-.1	-.1	.0	.0	.0	-.3	-.6	-.3	.0	-.1	-.3	-.3	-.2	-.1	-.2	-.1	.0	.1	.1
-.2	-.2	-.3	-.4	-.9	-1.2	-1.1	-.9	-1.1	-.6	-.6	-.7	-.3	-.1	-.2	-.5	-1.2	-2.6	-3.9	-4.4	-4.3	-4.5	-5.3	-5.0	-2.8	-3.0	-3.8	-4.9	-4.9	-4.7	-4.3	-3.5	-3.1	-2.6	-.7	-.3
-1.4	-1.4	-1.2	-.9	-1.2	-1.5	-2.0	-2.5	-2.1	-1.1	-.8	-.9	-1.0	-1.0	-1.2	-1.6	-2.3	-3.2	-3.8	-4.2	-4.4	-5.1	-5.9	-6.5	-6.8	-6.7	-6.4	-5.9	-5.4	-4.9	-4.5	-4.2	-3.8	-2.4	-1.7	-1.6

Figure 50. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations



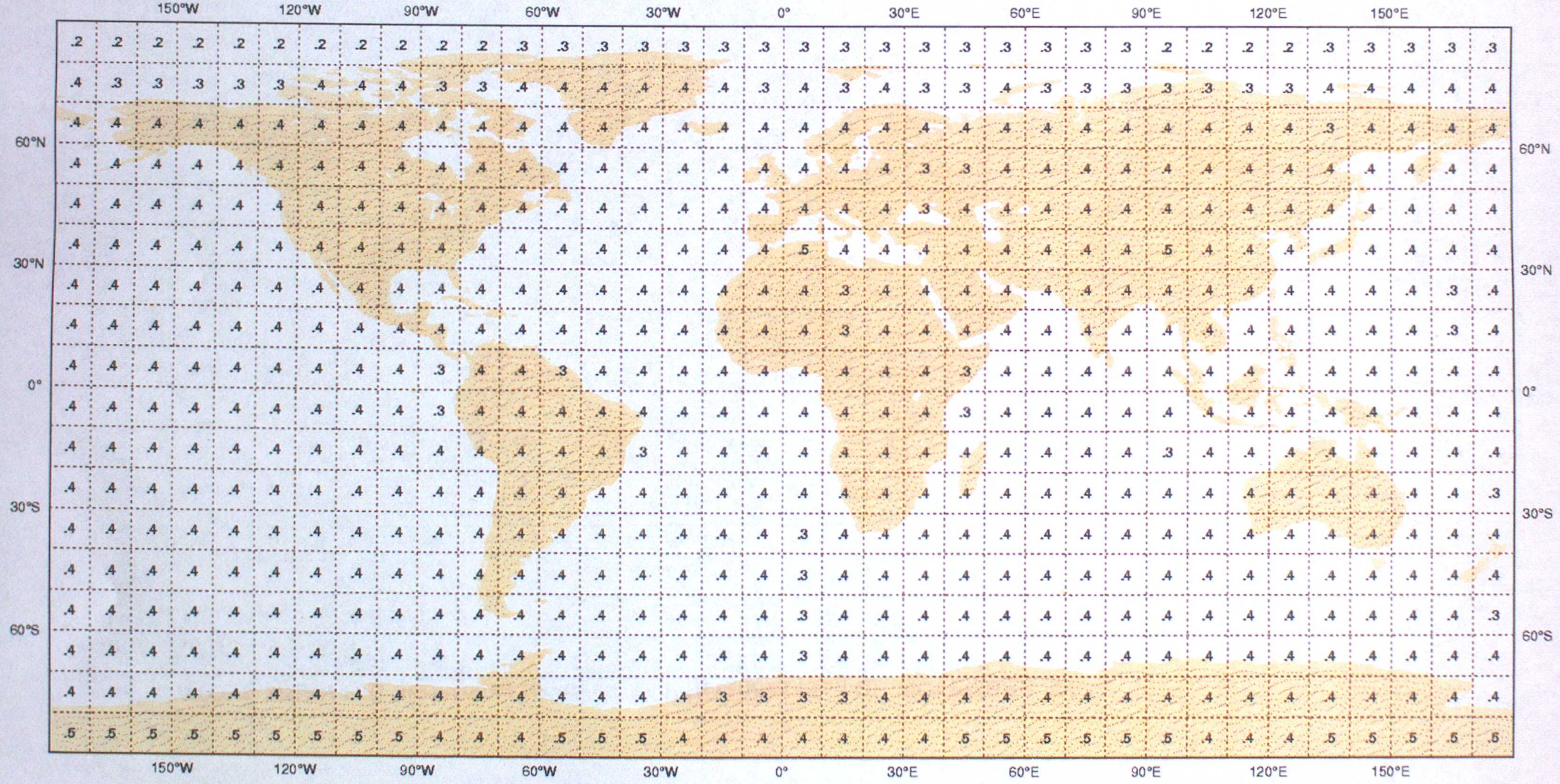
.4	.4	.3	.3	.3	.3	.3	.4	.5	.7	.7	.7	1.0	1.2	1.3	.8	.5	.4	.5	.5	.6	.5	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.3	.4	.4	.4
.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	.6	.8	1.6	1.9	1.9	1.3	.5	.5	.4	.6	.6	.5	.4	.6	.6	.4	.4	.5	.4	.5	.4	.4	.4	.4	.4	.4
.5	.6	.6	.8	.6	.6	.5	.5	.5	.5	.5	.6	.6	1.7	1.1	.6	.5	.5	.6	.6	.4	.5	.5	.4	.4	.4	.4	.6	.5	.5	.5	.7	.8	.6	.6	.5
.4	.6	.6	.5	.6	.6	.5	.5	.4	.4	.4	.5	.5	.5	.5	.5	.4	.6	.5	.5	.4	.3	.3	.3	.3	.4	.4	.6	.7	.7	.6	.6	.5	.5	.5	.4
.4	.4	.5	.4	.3	.5	.7	.6	.3	.5	.4	.5	.5	.4	.4	.3	.3	.5	.5	.5	.4	.6	.5	.5	.5	1.0	1.1	.8	.6	.5	.4	.4	.5	.4	.4	.4
.4	.4	.4	.4	.3	.4	.7	.7	.7	.6	.5	.4	.4	.4	.4	.3	.3	.6	.5	.6	.6	.7	.7	1.0	.9	2.0	1.9	2.7	1.2	.5	.5	.6	.4	.4	.4	.4
.3	.5	.4	.3	.3	.3	.5	.7	.6	.5	.4	.3	.3	.4	.5	.4	.5	.5	.4	.5	.6	.6	.5	.7	.5	.5	1.0	1.0	.6	.4	.5	.4	.4	.3	.4	.3
.5	.4	.4	.4	.4	.5	.4	.4	.6	.7	.7	.6	.5	.4	.3	.4	.6	.7	.5	.8	.7	.8	.8	.5	.5	.6	.5	.5	.5	.5	1.0	.7	.6	.6	.6	.5
.7	.7	.8	.7	.6	.6	.6	.5	.5	.7	1.1	.8	.6	.5	.6	.6	.6	.6	.8	1.1	1.0	1.0	.9	.5	.6	.7	.7	.8	.9	.8	.6	.6	.6	.6	.7	.7
.5	.4	.3	.3	.2	.2	.3	.2	.3	.3	1.0	1.2	1.0	.9	.4	.3	.3	.2	.5	1.1	1.3	1.0	.3	.5	.5	.7	.8	.7	.9	.9	.7	.8	.9	.7	.8	.7
.6	.5	.5	.4	.4	.3	.2	.3	.3	.3	1.0	1.4	1.2	.9	.5	.3	.2	.2	.3	1.1	1.1	1.0	.6	.3	.3	.7	.5	.3	.3	.4	.8	.8	.5	.4	.5	.5
.3	.5	.5	.5	.5	.4	.4	.3	.3	.2	.4	1.4	1.6	.7	.5	.4	.3	.2	.3	.8	1.1	.7	.6	.3	.3	.3	.3	.3	.3	.8	.9	.7	.8	.5	.3	.3
.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.6	1.0	.6	.4	.4	.4	.4	.3	.3	.5	.7	.4	.3	.3	.3	.3	.3	.3	.3	.5	.5	.6	.8	.5	.3	.4
.4	.3	.3	.3	.3	.3	.3	.3	.4	.3	.6	.5	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.5	.4	.5	.5
.5	.4	.4	.4	.4	.5	.4	.4	.4	.4	.6	.5	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5
.5	.5	.4	.5	.6	.6	.6	.5	.6	.5	.5	.7	.5	.5	.4	.4	.4	.4	.4	.4	.4	.5	.9	1.3	.8	.6	.9	1.1	1.2	1.0	1.0	1.1	.9	.7	.5	.5
.7	.7	.8	.9	1.3	1.6	1.4	1.1	1.0	.9	.6	.7	.6	.5	.6	.9	1.4	2.1	2.6	3.0	3.1	3.1	3.1	2.6	2.4	2.2	2.5	2.9	2.6	2.3	2.1	1.7	1.6	1.7	1.1	.7
.9	.9	1.0	1.1	1.1	1.0	1.2	1.4	1.3	.8	.6	.6	.6	.7	.8	1.0	1.0	1.1	1.3	1.4	1.6	1.8	2.1	2.4	2.5	2.4	2.3	2.0	1.8	1.4	1.2	1.2	1.2	1.3	1.0	.9

Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations



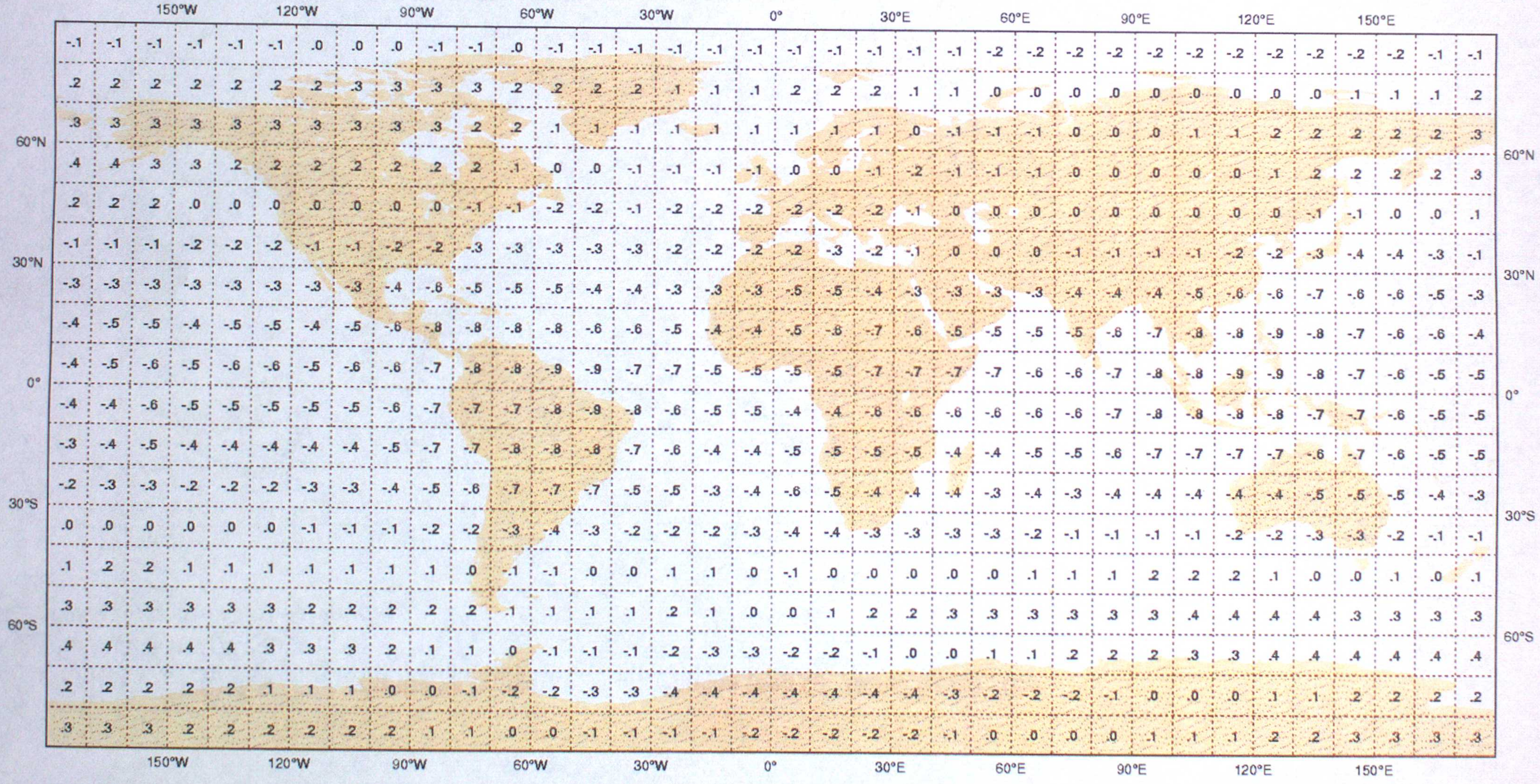
.1	.1	.1	.1	.2	.2	.2	.2	.2	.3	.3	.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1
.2	.3	.3	.2	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.1	.1	.1	.1	.2	.2	.1	.1	.1	.1	.1	.1	.1	.2	.2	.2	.2	.2	.2
.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.3	.2	.2	.2	.2	.1	.1	.2	.2	.2	.2	.1	.1	.1	.1	.1	.2	.2	.3	.3	.3	.3	.4	.5	.4
.5	.4	.3	.3	.2	.2	.3	.3	.3	.3	.3	.2	.2	.1	.0	.0	.0	-.1	.0	.1	.0	.0	.0	.1	.1	.1	.1	.2	.2	.3	.3	.3	.3	.4	.4	.4
.3	.2	.2	.1	.0	.0	.0	.1	.0	.1	.1	.1	.1	.0	.0	-.1	-.1	-.1	.0	.0	.0	.0	.1	.1	.1	.1	.1	.2	.2	.2	.2	.2	.1	.1	.2	.2
-.1	.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	.0	-.1	-.1	-.1	-.1	.0	-.1	-.1	-.1	-.1	.0	.0	.0	.0	.0	.1	.1	.0	.0	-.1	-.2	-.2	-.1	.0
-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.2	-.3	-.2	-.2	-.2	-.2	-.2	-.1	-.2	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.2	-.2	-.2	-.3	-.4	-.3	-.3	-.3	-.2
-.3	-.3	-.3	-.3	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.3	-.4	-.2
-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.3	-.3	-.3	-.3	-.3	-.3
-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.3	-.4	-.3	-.3	-.3	-.3	-.3	-.2	-.2	-.4	-.4	-.3	-.3	-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3
-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.3	-.2	-.3	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.3	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3
-.1	-.2	-.2	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2
.2	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	-.1	.0	-.1	-.2	-.2	-.1	-.1	-.1	-.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	-.1
.3	.2	.1	.1	.1	.2	.2	.1	.1	.1	.1	.1	.1	.1	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.1	.2	.1	.1
.3	.3	.3	.2	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.2	.3	.2	.2	.2	.3	.3	.3	.3	.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.3	.3
.4	.4	.5	.4	.3	.3	.3	.3	.3	.3	.2	.2	.1	.1	.1	.2	.2	.1	.1	.1	.2	.2	.3	.3	.3	.4	.4	.4	.4	.4	.5	.4	.5	.5	.5	.4
.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.1	.1	.0	.0	.1	.0	.0	.0	.0	.1	.1	.1	.1	.2	.2	.2	.2	.3	.3	.3	.4	.4	.3	.3	.3
.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5

Figure 52. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations



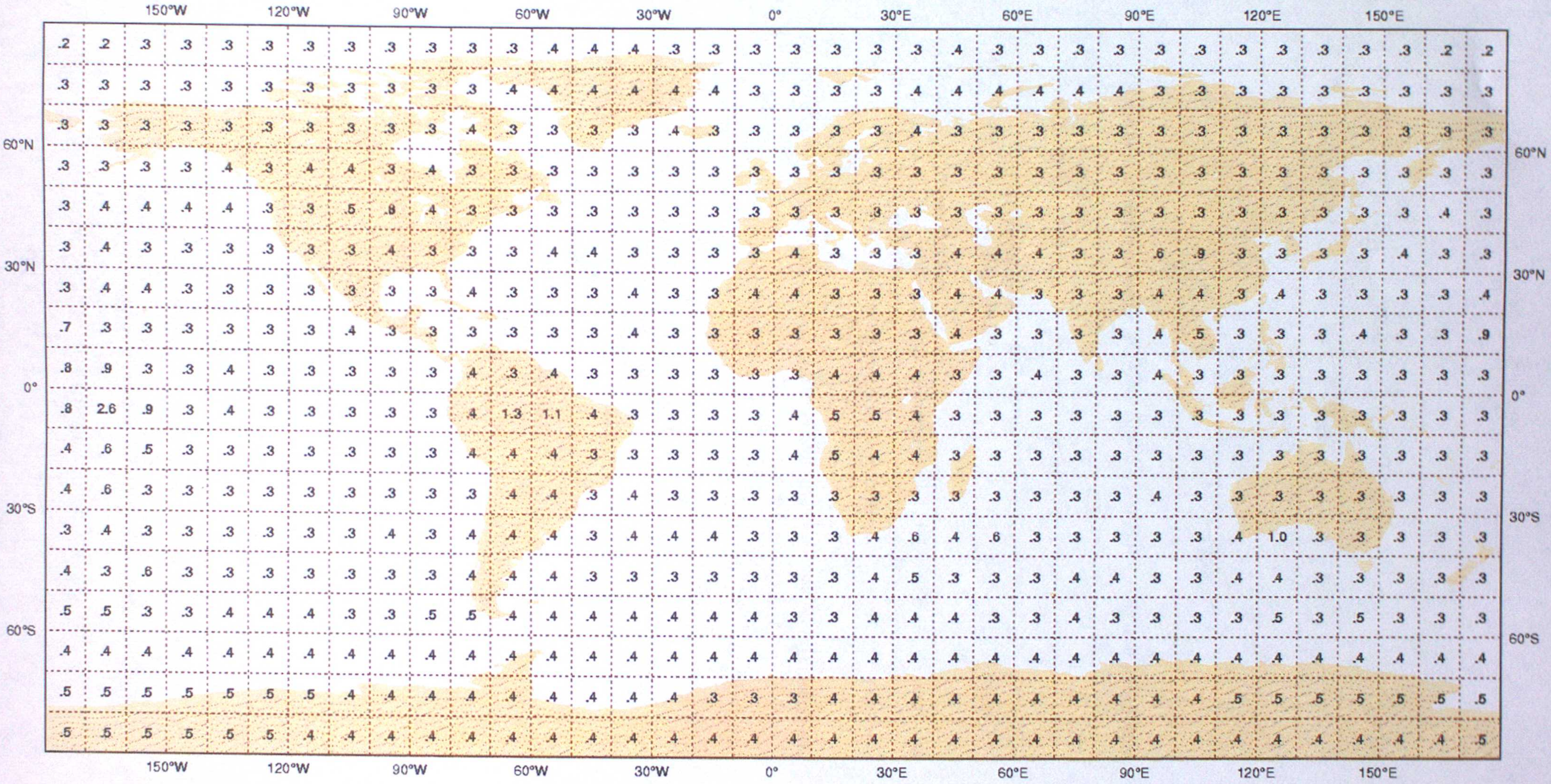
.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.3	.3	.3	.3	.3
.4	.3	.3	.3	.3	.3	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.3	.4	.3	.4	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.5

Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations



-.1	-.1	-.1	-.1	-.1	-.1	.0	.0	.0	-.1	-.1	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1
.2	.2	.2	.2	.2	.2	.2	.3	.3	.3	.3	.2	.2	.2	.2	.1	.1	.1	.2	.2	.2	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.1	.2
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0	-.1	-.1	-.1	.0	.0	.0	.1	.1	.2	.2	.2	.2	.2	.3
.4	.4	.3	.3	.2	.2	.2	.2	.2	.2	.2	.1	.0	.0	-.1	-.1	-.1	-.1	.0	.0	-.1	-.2	-.1	-.1	-.1	.0	.0	.0	.0	.0	.1	.2	.2	.2	.2	.3
.2	.2	.2	.0	.0	.0	.0	.0	.0	.0	-.1	-.1	-.2	-.2	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	-.1	-.1	.0	.0	.1
-.1	-.1	-.1	-.2	-.2	-.2	-.1	-.1	-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.3	-.2	-.1	.0	.0	.0	-.1	-.1	-.1	-.1	-.2	-.2	-.3	-.4	-.4	-.3	-.1
-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.6	-.5	-.5	-.5	-.4	-.4	-.3	-.3	-.3	-.5	-.5	-.4	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.5	-.6	-.6	-.7	-.6	-.6	-.5	-.3
-.4	-.5	-.5	-.4	-.5	-.5	-.4	-.5	-.6	-.8	-.8	-.8	-.8	-.6	-.6	-.5	-.4	-.4	-.5	-.6	-.7	-.6	-.5	-.5	-.5	-.5	-.6	-.7	-.8	-.8	-.9	-.8	-.7	-.6	-.6	-.4
-.4	-.5	-.6	-.5	-.6	-.6	-.5	-.6	-.6	-.7	-.8	-.8	-.9	-.9	-.7	-.7	-.5	-.5	-.5	-.5	-.7	-.7	-.7	-.7	-.6	-.6	-.7	-.8	-.8	-.9	-.9	-.8	-.7	-.6	-.5	-.5
-.4	-.4	-.6	-.5	-.5	-.5	-.5	-.5	-.6	-.7	-.7	-.7	-.8	-.9	-.8	-.6	-.5	-.5	-.4	-.4	-.6	-.6	-.6	-.6	-.6	-.6	-.7	-.8	-.8	-.8	-.8	-.7	-.7	-.6	-.5	-.5
-.3	-.4	-.5	-.4	-.4	-.4	-.4	-.4	-.5	-.7	-.7	-.8	-.8	-.8	-.7	-.6	-.4	-.4	-.5	-.5	-.5	-.5	-.4	-.4	-.5	-.5	-.6	-.7	-.7	-.7	-.7	-.6	-.7	-.6	-.5	-.5
-.2	-.3	-.3	-.2	-.2	-.2	-.3	-.3	-.4	-.5	-.6	-.7	-.7	-.7	-.5	-.5	-.3	-.4	-.6	-.5	-.4	-.4	-.4	-.3	-.4	-.3	-.4	-.4	-.4	-.4	-.4	-.5	-.5	-.5	-.4	-.3
.0	.0	.0	.0	.0	.0	-.1	-.1	-.1	-.2	-.2	-.3	-.4	-.3	-.2	-.2	-.2	-.3	-.4	-.4	-.3	-.3	-.3	-.3	-.2	-.1	-.1	-.1	-.1	-.2	-.2	-.3	-.3	-.2	-.1	-.1
.1	.2	.2	.1	.1	.1	.1	.1	.1	.1	.0	-.1	-.1	.0	.0	.1	.1	.0	-.1	.0	.0	.0	.0	.0	.1	.1	.1	.2	.2	.2	.1	.0	.0	.1	.0	.1
.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.1	.1	.1	.1	.2	.1	.0	.0	.1	.2	.2	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.3	.3	.3	.3
.4	.4	.4	.4	.4	.3	.3	.3	.2	.1	.1	.0	-.1	-.1	-.1	-.2	-.3	-.3	-.2	-.2	-.1	.0	.0	.1	.1	.2	.2	.2	.3	.3	.4	.4	.4	.4	.4	.4
.2	.2	.2	.2	.2	.1	.1	.1	.0	.0	-.1	-.2	-.2	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.2	-.2	-.2	-.1	.0	.0	.0	.1	.1	.2	.2	.2	.2
.3	.3	.3	.2	.2	.2	.2	.2	.2	.1	.1	.0	.0	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.1	.0	.0	.0	.0	.1	.1	.1	.2	.2	.3	.3	.3	.3

Figure 54. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2004
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations



.2	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.4	.3	.4	.4	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.4	.4	.4	.4	.3	.3	.5	.8	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3
.3	.4	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.4	.4	.3	.3	.3	.3	.4	.3	.3	.3	.4	.4	.4	.3	.3	.6	.9	.3	.3	.3	.3	.4	.3	.3
.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.4	.3	.3	.4	.4	.3	.3	.3	.4	.4	.3	.3	.3	.4	.4	.3	.4	.3	.3	.3	.3	.4
.7	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.4	.5	.3	.3	.3	.4	.3	.3	.9
.8	.9	.3	.3	.4	.3	.3	.3	.3	.3	.4	.3	.4	.3	.3	.3	.3	.3	.3	.4	.4	.4	.3	.3	.4	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3
.8	2.6	.9	.3	.4	.3	.3	.3	.3	.3	.4	1.3	1.1	.4	.3	.3	.3	.3	.4	.5	.5	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.4	.6	.5	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.3	.3	.3	.3	.3	.4	.5	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.4	.6	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3
.3	.4	.3	.3	.3	.3	.3	.3	.4	.3	.4	.4	.4	.3	.4	.4	.4	.3	.3	.3	.4	.6	.4	.6	.3	.3	.3	.3	.3	.4	1.0	.3	.3	.3	.3	.3
.4	.3	.6	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.5	.3	.3	.3	.4	.4	.3	.3	.4	.4	.3	.3	.3	.3	.3
.5	.5	.3	.3	.4	.4	.4	.3	.3	.5	.5	.4	.4	.4	.4	.4	.4	.4	.3	.3	.4	.4	.4	.3	.3	.4	.3	.3	.3	.3	.5	.3	.5	.3	.3	.3
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored :Mean sea-level pressure (hPa)
:Wind speed (m s^{-1})
:Wind direction (degrees)

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. A positive bias indicates the wind observation is veered to the background

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS :15 hPa (pressure)
:25 m s^{-1} (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13531	22.9	-37.9	P	394	0	2	0.4	-0.1	0.4
13533	28.7	-68.2	P	220	0	0	0.6	0.1	0.6
13534	32.9	-32.9	P	370	0	2	0.4	-0.4	0.5
13602	19.1	-47.5	P	228	0	0	0.5	0.6	0.8
41520	23.3	-61.5	P	1038	0	68	0.6	-0.2	0.7
41521	18.9	-59.1	P	933	0	67	0.7	-0.6	1.0
41539	23.7	-67.4	P	529	0	1	0.5	0.9	1.0
41540	39.3	-46.8	P	521	0	2	0.8	0.8	1.1
41541	24.7	-76.4	P	502	0	1	0.5	1.1	1.2
41542	28.9	-72.8	P	526	0	1	0.5	-0.1	0.5
41543	25.5	-70.7	P	519	0	0	0.5	-0.1	0.5
41544	21.6	-59.5	P	485	0	0	0.5	0.2	0.5
41545	25.2	-66.4	P	521	0	1	0.5	0.4	0.6
41546	16.2	-61.8	P	592	0	31	0.9	1.0	1.4
41548	19.9	-55.6	P	950	0	42	0.7	0.8	1.1
41549	19.0	-56.1	P	1066	0	51	0.7	0.9	1.2
41550	15.2	-74.0	P	973	0	42	0.9	1.2	1.5
41551	14.2	-54.1	P	856	0	39	0.8	1.2	1.4
41590	27.0	-55.5	P	420	0	1	0.6	1.5	1.6
41595	25.0	-43.1	P	528	0	7	0.5	1.2	1.3
41600	40.9	-44.8	P	757	0	30	1.4	-0.4	1.4
41601	43.1	-37.4	P	637	0	9	0.8	-0.3	0.8
41631	27.5	-71.1	P	380	1	3	0.9	0.9	1.3
41655	31.4	-60.6	P	416	0	10	1.2	0.9	1.5
41663	17.3	-62.7	P	949	0	71	1.2	-0.9	1.5
41664	17.5	-53.3	P	1223	0	100	0.9	-1.0	1.4
41665	14.6	-51.4	P	1157	0	71	0.6	-0.6	0.9
41666	15.5	-55.7	P	1137	0	70	0.8	-0.6	1.0
41920	22.3	-65.8	P	207	2	4	0.7	0.0	0.7
41921	22.9	-71.6	P	221	19	67	5.9	6.4	8.7
41922	21.6	-71.4	P	218	1	7	1.6	-0.3	1.6
41924	23.4	-71.8	P	223	0	3	0.8	0.0	0.8
41925	23.4	-71.9	P	223	1	4	1.1	0.0	1.1
41926	23.0	-71.5	P	243	0	4	0.5	0.1	0.5
41927	26.1	-70.6	P	238	0	2	0.6	-0.2	0.6
41928	21.2	-73.1	P	205	0	2	0.7	-0.2	0.8
41929	26.0	-72.7	P	252	1	5	0.5	0.3	0.6
41930	25.3	-66.8	P	259	0	4	0.4	-0.2	0.5
41931	27.1	-76.5	P	219	0	4	0.9	-0.1	0.9
41932	23.0	-68.5	P	252	0	3	0.8	0.0	0.8
41934	23.0	-65.4	P	249	1	4	0.9	-0.6	1.1
41935	22.6	-69.1	P	237	0	2	0.5	-0.2	0.5
41939	33.2	-75.3	P	253	0	9	1.5	-2.0	2.5
41942	37.0	-67.2	P	233	0	5	2.0	0.4	2.1
41943	27.1	-75.4	P	254	0	6	2.0	-0.1	2.1
41944	37.2	-67.5	P	267	0	23	1.6	1.9	2.4
44547	56.0	-35.7	P	822	0	27	0.7	-0.3	0.7
44549	50.5	-40.8	P	1020	2	45	1.0	0.1	1.0
44550	48.1	-42.1	P	325	0	1	0.8	-0.2	0.8
44551	56.4	-13.8	P	31	0	10	2.5	1.8	3.0
44601	46.2	-50.4	P	307	0	1	0.6	-1.0	1.2
44612	55.9	-23.2	P	596	0	1	0.5	0.0	0.6
44617	48.8	-33.3	P	878	0	40	0.8	0.2	0.8
44623	30.0	-50.2	P	655	0	1	0.6	-0.7	0.9
44624	47.9	-30.2	P	557	0	3	1.2	0.8	1.4
44625	58.9	-38.9	P	614	0	1	0.9	-0.2	0.9
44627	43.8	-19.3	P	511	0	0	0.7	0.2	0.7
44628	33.0	-21.1	P	637	0	4	0.5	-0.2	0.5
44630	28.1	-38.8	P	660	0	2	0.5	0.4	0.7
44721	53.9	-48.9	P	681	0	2	0.6	0.2	0.7

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
44722	43.4	-50.6	P	667	0	0	0.8	0.0	0.8
44723	57.4	-40.4	P	662	0	1	0.7	0.0	0.7
44742	43.2	-15.6	P	526	0	1	0.5	-0.2	0.5
44743	43.0	-13.0	P	486	0	1	0.5	0.0	0.5
44745	49.7	-17.8	P	702	0	5	0.4	-0.3	0.5
44747	50.9	-6.6	P	364	0	0	0.4	-0.5	0.6
44761	54.7	-17.4	P	521	0	1	0.8	-1.0	1.3
44766	49.6	-9.9	P	554	0	1	0.4	-0.4	0.6
44773	60.3	-33.4	P	304	0	24	1.0	-0.3	1.1
44775	49.4	-47.2	P	310	0	25	1.1	-0.1	1.1
44777	24.4	-50.0	P	240	0	15	0.6	-0.2	0.6
44778	29.7	-32.4	P	270	0	17	0.6	0.0	0.6
44779	50.5	-32.3	P	325	1	21	0.8	-0.2	0.8
48522	42.4	-53.0	P	1	100	100			
62510	38.2	-24.6	P	468	0	1	0.6	-0.3	0.6
62511	48.6	-13.4	P	113	0	0	0.4	0.2	0.4
62512	46.6	-14.0	P	102	0	2	0.4	-0.1	0.4
62556	38.5	-14.3	P	811	1	20	0.8	-0.3	0.8
62557	41.3	-10.6	P	663	0	2	0.6	-0.1	0.6
62558	39.3	-16.8	P	673	0	2	0.5	-0.1	0.5
62560	42.2	-14.7	P	599	0	1	0.5	0.5	0.8
62561	48.3	-21.0	P	265	0	0	0.5	-0.3	0.6
62562	50.8	-18.3	P	963	0	36	0.6	0.6	0.9
62563	54.4	-18.0	P	663	0	1	0.6	-0.1	0.6
62564	42.8	-19.5	P	669	0	1	0.6	0.1	0.6
62565	53.8	-16.1	P	668	0	1	0.7	-0.1	0.7
62566	54.9	-29.9	P	669	0	1	0.9	-0.2	0.9
62694	51.1	-17.5	P	642	0	19	0.8	1.0	1.3
62801	29.5	-29.3	P	1029	0	41	0.5	0.3	0.5
64524	59.5	-47.6	P	629	1	4	1.1	0.5	1.2
64608	63.6	-55.8	P	651	0	1	0.6	-0.2	0.6
64609	62.3	-31.1	P	660	0	0	0.8	0.0	0.8
64610	62.8	-21.5	P	636	0	0	0.7	0.0	0.7
65599	56.9	-12.8	P	114	0	17	0.7	-0.3	0.7
65600	59.2	-20.6	P	121	0	13	1.0	-0.2	1.1

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13602	19.1	-47.5	SPEED	221	0	100	1.3	-1.3	1.8
41539	23.7	-67.4	SPEED	528	0	100	1.6	-1.0	1.8
41540	39.3	-46.8	SPEED	506	0	100	2.5	1.0	2.7
41541	24.7	-76.4	SPEED	476	0	100	1.7	0.5	1.7
41542	28.9	-72.8	SPEED	491	0	100	1.7	-0.4	1.7
41543	25.5	-70.7	SPEED	499	0	100	1.9	0.3	2.0
41544	21.6	-59.5	SPEED	469	0	100	1.9	-0.2	1.9
41545	25.2	-66.4	SPEED	496	0	100	1.9	-0.2	1.9
41590	27.0	-55.5	SPEED	198	0	100	4.0	5.9	7.1
41595	25.0	-43.1	SPEED	493	0	100	1.8	-0.7	1.9
41920	22.3	-65.8	SPEED	9	22	100	8.0	1.1	8.1
41921	22.9	-71.6	SPEED	208	1	100	3.5	-5.3	6.4
41922	21.6	-71.4	SPEED	209	1	100	2.3	-6.2	6.6
41924	23.4	-71.8	SPEED	7	43	100	8.4	11.8	14.5
41925	23.4	-71.9	SPEED	214	2	100	3.2	-5.5	6.3
41926	23.0	-71.5	SPEED	229	1	100	2.2	-0.1	2.2
41927	26.1	-70.6	SPEED	9	33	100	1.4	1.1	1.8
41928	21.2	-73.1	SPEED	1	0	100	0.0	16.5	16.5
41930	25.3	-66.8	SPEED	2	100	0			
41931	27.1	-76.5	SPEED	2	0	100	0.8	10.9	11.0
41932	23.0	-68.5	SPEED	6	0	100	7.6	2.0	7.8
41934	23.0	-65.4	SPEED	5	0	100	2.0	-0.4	2.1

41935	22.6	-69.1	SPEED	5	80	100	0.0	7.1	7.1
41939	33.2	-75.3	SPEED	2	50	100	0.0	15.3	15.3
62511	48.6	-13.4	SPEED	98	0	100	1.4	1.2	1.8
62565	53.8	-16.1	SPEED	592	0	100	1.8	0.5	1.9
62566	54.9	-29.9	SPEED	623	0	100	2.2	0.1	2.2

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13602	19.1	-47.5	DIRN.	34	0	0	22.6	60.4	64.5
41539	23.7	-67.4	DIRN.	274	0	0	15.2	6.0	16.3
41540	39.3	-46.8	DIRN.	388	0	0	19.1	-4.9	19.8
41541	24.7	-76.4	DIRN.	360	0	0	19.0	-4.7	19.6
41542	28.9	-72.8	DIRN.	226	0	0	16.3	16.0	22.9
41543	25.5	-70.7	DIRN.	319	0	0	15.1	7.6	16.9
41544	21.6	-59.5	DIRN.	356	0	0	14.1	7.6	16.0
41545	25.2	-66.4	DIRN.	222	0	0	13.8	3.2	14.1
41590	27.0	-55.5	DIRN.	135	0	0	19.3	12.6	23.0
41595	25.0	-43.1	DIRN.	149	0	0	20.1	-20.0	28.4
41920	22.3	-65.8	DIRN.	6	33	0	12.0	38.5	40.4
41921	22.9	-71.6	DIRN.	8	25	0	49.1	20.9	53.3
41922	21.6	-71.4	DIRN.	5	60	0	5.1	-29.2	29.6
41924	23.4	-71.8	DIRN.	7	43	0	2.5	13.6	13.9
41925	23.4	-71.9	DIRN.	10	50	0	25.5	42.8	49.8
41926	23.0	-71.5	DIRN.	186	2	0	24.4	3.1	24.6
41927	26.1	-70.6	DIRN.	3	100	0			
41928	21.2	-73.1	DIRN.	1	0	0	0.0	58.5	58.5
41930	25.3	-66.8	DIRN.	2	100	0			
41931	27.1	-76.5	DIRN.	2	0	0	36.8	-32.3	49.0
41932	23.0	-68.5	DIRN.	1	0	0	0.0	-64.3	64.3
41934	23.0	-65.4	DIRN.	1	0	0	0.0	-93.9	93.9
41935	22.6	-69.1	DIRN.	4	100	0			
41939	33.2	-75.3	DIRN.	1	100	0			
62511	48.6	-13.4	DIRN.	56	0	0	23.9	-21.2	31.9
62565	53.8	-16.1	DIRN.	543	0	0	17.5	-8.7	19.5
62566	54.9	-29.9	DIRN.	553	0	0	15.6	0.4	15.6

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:40°N - 70°N, 60°W - 0°W.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.
GROSS ERROR LIMITS	:10.0 °C ; 60 m s^{-1} Vector Wind	
SELECTION CRITERIA	:N REP $\geq$ 20	

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	892	0	5	1.5	0.2	620	0	6	0	8.8	0.2
ACA	769	0	3	1.5	0.0	504	0	5	0	7.2	0.4
AEA	504	0	2	1.4	0.0	416	0	3	0	7.1	0.4
AEL	120	16	45	4.4	3.6	118	1	9	0	9.9	-0.5
AFL	466	1	3	1.7	0.2	255	0	2	0	7.0	0.8
AFR	599	1	7	1.5	0.4	571	0	11	0	9.8	-0.1
AJM	188	1	2	1.3	0.0	151	0	1	0	6.0	0.2
AMT	38	0	3	1.6	0.9	38	0	5	0	7.7	-1.2
AMX	351	2	4	1.5	0.4	309	1	7	0	9.4	-0.4
AUA	46	4	39	3.9	2.8	44	0	9	0	6.3	-1.4
AVA	40	3	8	1.3	0.2	40	0	63	0	13.1	-0.4
AZA	345	1	10	2.6	0.8	262	1	6	0	9.6	0.3
BAL	244	0	11	1.4	-0.1	244	1	14	0	8.8	-0.3
BAW	525	0	14	1.7	-0.4	359	1	16	0	6.2	0.4
BHP	47	0	0	1.4	-0.4	37	0	0	0	5.8	1.5
BPA	237	0	75	4.0	2.2	235	0	13	0	9.1	-0.5
BWA	175	1	5	1.5	0.1	149	1	9	0	11.0	0.1
CAJ	33	0	52	0.9	-0.5	32	0	50	0	6.6	-1.6
CFC	26	0	8	1.9	0.7	28	0	7	0	6.1	2.0
CFG	543	0	4	1.3	0.1	468	0	6	0	8.8	-0.3
CKS	169	0	4	1.6	0.5	127	0	11	0	12.6	-2.0
CLX	265	1	3	1.7	-0.4	167	0	3	0	6.7	-0.3
COA	119	0	26	1.5	-0.1	78	0	31	0	10.1	-0.6
CRL	293	0	3	1.8	0.7	271	1	47	0	9.4	-0.1
CUB	134	0	4	1.3	-0.4	122	0	6	0	8.9	0.3
DAL	674	1	8	1.7	-0.3	456	1	10	0	8.9	0.5
DHL	140	5	100	6.8	-6.4	75	3	29	0	12.7	1.2
DLH	524	1	13	1.5	0.2	518	0	14	0	8.3	0.5
DRD	80	0	0	1.2	-0.1	79	0	43	0	12.9	-2.6
EDW	48	2	4	1.5	-0.2	42	0	38	0	8.0	1.1
EEZ	35	0	14	2.6	0.8	35	0	9	0	5.0	1.2
EIA	258	2	15	1.7	0.4	252	0	100	0	20.4	4.1
ELY	56	0	5	1.7	0.4	39	0	5	0	6.0	0.1
ETH	27	0	7	0.9	0.0	26	0	15	0	9.6	-0.3
FCA	78	0	3	1.3	0.4	76	0	5	0	7.2	0.2
FDX	535	1	25	1.4	0.4	387	1	23	0	7.9	0.6
FIN	185	1	7	1.4	-0.1	139	1	6	0	6.9	0.3
FWI	246	0	5	1.8	-0.3	245	0	8	0	10.1	-1.2
GCO	49	0	8	1.4	0.4	46	2	11	0	5.7	1.5
GRL	65	0	2	1.4	0.2	57	2	2	0	4.0	0.8
GTI	202	0	20	3.0	1.4	194	1	15	0	10.1	0.1
HXL	240	0	4	1.6	0.0	207	1	7	0	10.3	-0.3
IBE	1488	1	6	1.7	0.3	1479	1	9	0	9.6	0.1
ICE	973	1	4	1.5	0.0	612	0	4	0	7.4	0.6
IWD	98	2	6	1.2	-0.1	96	1	7	0	7.9	-0.2
KLM	643	0	2	1.7	-0.1	482	0	5	0	9.6	-0.3
LAN	34	0	18	1.6	-0.2	34	0	15	0	7.5	0.2
LDI	218	5	10	1.8	0.1	171	0	2	0	6.1	1.2
LOT	236	0	3	1.8	0.0	161	0	3	0	7.6	-0.1
LTU	763	1	5	1.3	-0.1	578	0	6	0	7.1	0.6
MON	24	0	8	2.6	0.5	22	0	5	0	11.8	-0.6
MPD	120	0	1	1.5	0.3	112	0	2	0	6.7	0.6
MPH	420	0	3	1.8	-0.5	315	0	6	0	9.1	-0.3
MYT	114	0	3	1.7	-0.2	83	0	7	0	7.7	0.3
NAO	35	0	6	1.8	-0.4	30	0	7	0	10.0	0.0
NCA	22	0	0	0.8	0.0	21	0	5	0	9.6	-0.6
NVR	36	0	3	1.2	-0.3	23	0	4	0	5.1	1.3
NWA	1306	1	3	1.8	0.3	1248	0	6	0	9.1	0.2
OAE	181	0	8	1.4	0.0	118	1	40	0	16.7	2.1

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
OOM	33	0	0	1.9	-1.4	26	0	0	0	4.8	1.1
PAC	107	1	12	1.4	-0.1	73	0	12	0	8.8	-0.5
PLM	73	0	3	1.9	1.2	66	0	50	0	10.2	-0.5
RAM	195	2	5	1.9	0.2	132	1	53	0	9.8	0.2
RCH	223	1	100	3.5	-1.1	175	0	100	0	12.4	1.1
RRR	77	0	9	1.7	-0.3	78	0	12	0	6.6	0.2
RZO	129	0	2	1.5	-0.2	117	0	48	0	9.1	-0.3
SEU	56	0	7	1.5	0.0	46	0	11	0	8.4	0.9
SLM	30	0	7	1.0	0.7	32	0	50	0	8.5	-0.6
TAP	209	0	3	1.5	-0.3	174	1	49	0	11.5	-0.1
TPA	22	0	0	1.3	0.1	20	0	0	0	8.7	-3.2
TSC	40	0	5	1.8	-0.5	32	0	3	0	4.2	0.8
UAE	42	0	14	1.9	0.5	39	0	18	0	8.2	1.5
UAL	229	1	64	1.9	-1.0	176	1	72	0	12.8	2.5
UPS	844	1	50	2.1	0.7	823	0	50	0	7.0	0.2
USA	122	0	2	1.2	0.1	87	0	3	0	8.9	1.1
VIR	145	1	6	1.4	-0.2	90	0	10	0	8.5	-0.1
WOA	289	0	11	1.5	0.3	240	0	18	0	10.1	0.3
XLA	33	0	6	1.6	0.6	30	0	7	0	9.5	0.6

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
EU	27502	0	19	1.1	0.2	27502	0	19	0	4.5	0.5

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
N	378	1	4	2.2	0.9	248	0	6	0	9.5	0.5
US ACARS	15465	0	28	1.5	0.2	15465	0	24	0	5.2	0.4

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.1	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
ASAP5	12	Z	100	4	0	26.0	26.0	2.0
EBUQ	12	Z	100	18	0	40.3	46.0	22.2
ELML7	00	Z	100	9	0	17.2	21.3	12.6
ELML7	12	Z	100	9	0	36.6	37.9	9.8
FQFL	00	Z	100	6	0	101.1	102.9	19.2
FQFL	12	Z	100	8	0	37.5	50.7	-34.1
FQFM	00	Z	100	9	0	10.7	19.2	15.9
FQFM	12	Z	100	7	0	9.6	32.6	31.1
KHRH	00	Z	100	8	0	14.3	40.5	37.9
KHRH	12	Z	100	8	0	14.7	60.6	58.8
KRPD	00	Z	100	2	0	1.5	47.5	47.5
LDWR	00	Z	100	28	0	13.0	17.2	-11.2
LDWR	12	Z	100	27	0	13.0	18.3	-12.9
OXVH2	00	Z	100	5	0	37.3	39.9	-14.0
OXVH2	12	Z	100	5	0	11.2	12.6	5.8
OXYH2	00	Z	100	6	0	5.5	14.6	13.5
OXYH2	12	Z	100	5	1	10.5	13.6	8.6
V2XM	00	Z	100	6	0	20.9	32.9	25.3
V2XM	12	Z	100	6	0	12.2	31.8	29.3
WAAH	00	Z	100	6	0	22.6	31.5	21.8
WAAH	12	Z	100	9	0	24.2	34.3	24.3
WPKD	00	Z	100	4	0	9.4	34.8	33.5
WPKD	12	Z	100	5	1	6.2	39.1	38.6
ZCBE7	12	Z	100	1	0	0.0	3.0	3.0
03953	00	Z	100	26	0	12.9	15.8	9.2
03953	12	Z	100	27	0	12.6	18.8	13.9
04018	00	Z	100	28	0	12.2	13.8	6.4
04018	12	Z	100	27	0	12.3	15.1	8.8
04220	00	Z	100	28	0	10.1	10.1	0.2
04220	12	Z	100	26	0	24.5	24.6	-0.8
04270	00	Z	100	27	0	15.2	15.2	-1.0
04270	12	Z	100	26	0	14.1	14.3	2.4
04339	00	Z	100	28	0	9.2	10.3	-4.8
04339	12	Z	100	27	0	8.7	8.7	0.6
04360	00	Z	100	26	0	10.0	11.2	4.9
04360	12	Z	100	27	0	14.1	15.0	5.2
08001	00	Z	100	24	2	28.6	31.9	-14.0
08001	12	Z	100	20	0	24.4	25.3	6.8
08508	00	Z	100	26	0	12.0	23.0	19.7
08508	12	Z	100	26	0	12.2	30.4	27.9
08522	12	Z	100	19	0	8.7	22.2	20.4
08594	12	Z	100	21	0	14.6	22.8	17.5
71600	00	Z	100	28	0	15.5	16.0	4.1
71600	12	Z	100	27	0	13.3	16.9	10.4
72201	00	Z	100	28	0	9.6	29.2	27.6
72201	12	Z	100	26	0	18.7	42.8	38.5
72402	00	Z	100	26	0	11.1	24.2	21.5
72402	12	Z	100	25	0	15.7	16.9	6.1
74494	00	Z	100	22	0	11.3	20.1	16.7
74494	12	Z	100	23	0	11.6	13.5	6.9
78016	00	Z	100	27	0	8.7	31.8	30.6
78016	12	Z	100	27	0	15.8	40.0	36.8

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.1	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
ASAP5	12	Z	500	5	0	6.5	7.3	-3.4
EBUQ	12	Z	500	21	0	5.9	6.0	-0.9
ELML7	00	Z	500	9	0	9.1	9.3	1.8
ELML7	12	Z	500	10	0	26.3	26.8	-5.4
FQFL	00	Z	500	6	1	4.9	17.1	-16.3
FQFL	12	Z	500	9	0	6.6	15.3	-13.8
FQFM	00	Z	500	9	0	11.2	12.1	4.4
FQFM	12	Z	500	11	0	9.1	11.1	6.4
KHRH	00	Z	500	9	0	10.6	17.6	14.0
KHRH	12	Z	500	8	0	10.5	22.1	19.5
KRPD	00	Z	500	3	0	2.9	20.2	20.0
KRPD	12	Z	500	1	0	0.0	15.0	-15.0
LDWR	00	Z	500	28	0	10.9	11.2	-2.3
LDWR	12	Z	500	27	0	8.4	10.4	-6.2
OXVH2	00	Z	500	6	0	41.2	42.6	-11.0
OXVH2	12	Z	500	5	0	4.8	8.8	7.4
OXYH2	00	Z	500	7	0	7.3	10.1	7.0
OXYH2	12	Z	500	6	1	6.5	12.4	10.5
PACDG	00	Z	500	2	0	3.0	3.6	2.0
V2XM	00	Z	500	6	0	6.3	25.1	24.3
V2XM	12	Z	500	6	0	4.9	22.4	21.8
WAAH	00	Z	500	6	0	14.0	14.0	-0.3
WAAH	12	Z	500	10	0	15.2	16.4	6.0
WPKD	00	Z	500	4	0	2.7	22.7	22.5
WPKD	12	Z	500	6	1	9.6	20.9	18.5
ZCBE7	12	Z	500	1	0	0.0	6.0	-6.0
03953	00	Z	500	27	0	5.4	5.4	-0.5
03953	12	Z	500	27	0	7.3	7.4	1.2
04018	00	Z	500	28	0	6.7	9.8	7.2
04018	12	Z	500	27	0	8.1	11.3	7.9
04220	00	Z	500	28	0	8.6	12.7	9.3
04220	12	Z	500	27	0	12.2	16.1	10.5
04270	00	Z	500	27	0	7.6	12.6	10.0
04270	12	Z	500	27	0	9.4	14.7	11.2
04339	00	Z	500	28	0	6.9	8.5	5.0
04339	12	Z	500	27	0	7.7	9.7	5.9
04360	00	Z	500	26	0	9.3	12.8	8.8
04360	12	Z	500	27	0	10.0	11.8	6.3
08001	00	Z	500	25	2	19.4	26.0	-17.3
08001	12	Z	500	20	1	19.3	19.4	-1.8
08508	00	Z	500	26	0	6.7	9.0	-6.0
08508	12	Z	500	26	0	8.2	8.8	-3.2
08522	12	Z	500	20	0	6.5	7.2	-3.0
08594	12	Z	500	23	0	6.8	7.0	-1.8
71600	00	Z	500	28	0	7.1	7.4	-1.9
71600	12	Z	500	27	0	11.5	11.8	2.9
72201	00	Z	500	28	0	9.1	9.4	-2.4
72201	12	Z	500	27	0	5.2	5.8	-2.7
72402	00	Z	500	28	0	8.4	8.4	0.0
72402	12	Z	500	26	0	8.1	8.3	-1.8
74494	00	Z	500	27	0	5.3	5.5	1.5
74494	12	Z	500	27	0	7.7	8.0	2.4
78016	00	Z	500	28	0	4.9	8.5	7.0
78016	12	Z	500	27	0	6.8	9.0	5.9

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
ASAP5	12	V	100	3	0	0	3.1	-0.5	-1.1
EBUQ	12	V	100	11	0	100	10.1	-0.9	1.7
ELML7	00	V	100	7	0	100	11.0	-5.0	0.5
ELML7	12	V	100	7	0	100	8.6	-0.8	-0.7
FQFL	00	V	100	6	0	0	6.2	-0.8	-0.6
FQFL	12	V	100	8	0	0	5.3	-1.2	-2.6
FQFM	00	V	100	8	0	0	3.8	0.5	-2.3
FQFM	12	V	100	7	0	0	4.4	-0.4	0.1
KHRH	00	V	100	7	0	100	11.3	1.4	1.6
KHRH	12	V	100	7	0	100	12.4	2.8	-1.6
KRPD	00	V	100	2	0	100	8.6	5.7	5.6
LDWR	00	V	100	27	0	0	2.6	-0.2	-0.5
LDWR	12	V	100	27	0	0	3.9	0.7	-0.4
OXVH2	00	V	100	4	0	0	5.3	3.9	-1.7
OXVH2	12	V	100	5	0	0	1.8	-0.1	0.3
OXYH2	00	V	100	1	0	0	2.7	1.3	-2.3
OXYH2	12	V	100	1	0	0	2.8	-2.8	0.3
V2XM	00	V	100	5	0	100	2.7	-0.8	-0.3
V2XM	12	V	100	6	0	100	4.4	1.2	0.5
WAAH	00	V	100	3	0	100	5.9	-1.1	3.1
WAAH	12	V	100	7	0	100	6.6	-2.1	0.2
WPKD	00	V	100	3	0	0	9.6	-6.9	2.6
WPKD	12	V	100	6	0	0	8.3	0.5	2.5
ZCBE7	12	V	100	1	0	0	4.5	-0.1	4.5
03953	00	V	100	24	0	0	3.5	-0.2	-0.2
03953	12	V	100	27	0	0	3.5	-0.2	-0.4
04018	00	V	100	28	0	0	4.6	-0.1	-1.3
04018	12	V	100	27	0	0	2.9	0.2	-0.4
04220	00	V	100	28	0	0	3.2	0.6	-0.3
04220	12	V	100	26	0	0	3.0	-0.2	-0.8
04270	00	V	100	26	0	0	5.1	0.1	0.7
04270	12	V	100	26	0	0	4.4	0.6	0.8
04339	00	V	100	21	0	0	5.2	0.4	-0.6
04339	12	V	100	24	0	0	4.0	2.1	-0.1
04360	00	V	100	26	0	0	3.6	-0.5	-0.5
04360	12	V	100	27	0	0	4.1	0.2	-0.3
08001	00	V	100	23	0	0	3.7	0.3	1.3
08001	12	V	100	20	0	0	4.4	-0.6	-1.5
08508	00	V	100	16	0	0	3.7	-0.3	-0.3
08508	12	V	100	15	0	0	3.8	0.3	0.2
08522	12	V	100	18	0	0	4.5	1.0	0.8
08594	12	V	100	20	0	100	5.8	-0.5	3.8
71600	00	V	100	28	0	0	4.3	-0.5	0.7
71600	12	V	100	27	0	0	5.0	0.3	0.4
72201	00	V	100	27	0	0	3.6	0.9	1.0
72201	12	V	100	26	0	0	4.1	1.1	0.5
72402	00	V	100	26	0	0	3.7	-0.5	1.2
72402	12	V	100	26	0	0	4.9	-0.4	-0.2
74494	00	V	100	21	0	100	3.2	-0.6	1.1
74494	12	V	100	23	0	100	3.5	-0.9	0.2
78016	00	V	100	27	0	0	4.7	0.8	1.4
78016	12	V	100	27	0	0	4.9	1.0	0.5

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Nov 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS	:Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
ASAP5	12	V	500	4	0	0	6.2	1.5	-1.9
EBUQ	12	V	500	17	0	100	9.8	0.9	-0.9
ELML7	00	V	500	8	0	100	9.3	-2.0	-0.6
ELML7	12	V	500	10	0	100	11.9	-3.7	-0.9
FQFL	00	V	500	7	0	0	3.8	0.7	-0.3
FQFL	12	V	500	9	0	0	3.3	1.2	-1.8
FQFM	00	V	500	9	0	0	2.5	0.0	-1.2
FQFM	12	V	500	11	0	0	3.5	-0.8	0.7
KHRH	00	V	500	7	0	100	11.4	2.7	-2.1
KHRH	12	V	500	7	0	100	12.4	2.2	-2.6
KRPD	00	V	500	3	0	100	8.2	4.5	-0.2
LDWR	00	V	500	27	0	3	5.4	-1.1	-0.3
LDWR	12	V	500	27	0	0	5.0	0.1	0.4
OXVH2	00	V	500	6	0	16	12.7	2.1	-4.4
OXVH2	12	V	500	4	0	0	3.4	0.5	1.1
OXYH2	00	V	500	1	0	0	9.1	-0.7	-9.1
OXYH2	12	V	500	2	0	0	2.1	1.5	1.1
PACDG	00	V	500	1	0	0	1.0	0.7	0.7
V2XM	00	V	500	6	0	0	5.0	-0.3	-2.9
V2XM	12	V	500	6	0	0	4.8	-2.5	-0.8
WAAH	00	V	500	5	0	100	8.8	0.2	-0.9
WAAH	12	V	500	8	0	100	9.1	-5.5	-0.4
WPKD	00	V	500	4	0	0	6.3	-2.7	1.3
WPKD	12	V	500	7	0	28	14.9	0.9	3.8
ZCBE7	12	V	500	1	0	0	2.0	-1.8	-0.9
03953	00	V	500	27	0	0	4.2	0.1	0.1
03953	12	V	500	27	0	0	3.7	0.6	-0.1
04018	00	V	500	28	0	0	3.6	0.8	-1.3
04018	12	V	500	27	0	0	4.0	-0.5	-0.8
04220	00	V	500	28	0	0	3.4	-0.1	-0.8
04220	12	V	500	27	0	0	4.3	-0.3	-1.2
04270	00	V	500	25	0	0	3.9	1.4	0.0
04270	12	V	500	27	0	0	5.4	-0.4	0.0
04339	00	V	500	22	0	0	5.5	-0.8	0.0
04339	12	V	500	27	0	0	5.4	0.1	-0.5
04360	00	V	500	24	0	0	4.3	-0.3	0.5
04360	12	V	500	27	0	0	4.7	-0.9	-0.1
08001	00	V	500	27	0	0	5.0	-0.8	-0.9
08001	12	V	500	21	0	0	3.4	0.2	-0.2
08508	00	V	500	16	0	0	3.5	0.3	0.7
08508	12	V	500	15	0	0	3.8	1.3	0.5
08522	12	V	500	20	0	0	4.1	0.7	0.7
08594	12	V	500	23	0	100	4.9	-0.8	1.1
71600	00	V	500	28	0	0	5.6	-0.3	0.3
71600	12	V	500	27	0	0	4.4	-0.7	0.8
72201	00	V	500	28	0	0	2.2	-0.2	-0.7
72201	12	V	500	27	0	0	2.4	-0.3	-0.6
72402	00	V	500	28	0	0	3.4	0.6	-0.7
72402	12	V	500	27	0	0	4.0	1.1	-0.6
74494	00	V	500	27	0	0	2.8	-0.4	0.8
74494	12	V	500	26	0	0	4.0	-1.4	0.6
78016	00	V	500	28	0	0	3.7	0.8	0.2
78016	12	V	500	27	0	0	3.6	-0.4	0.1

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45